

ANNALS

OF THE

SOUTH AFRICAN MUSEUM.

PART III.

XI.—*New and Little Known South African Solijugæ in the Collection of the South African Museum.*—By W. F. PURCELL, Ph.D., *First Assistant.*

THE present paper contains descriptions of ten new species of *Solpuga*, and of five little known forms of the genus, which were described by Koch in 1842; further, four new species of *Daesia*, and three of *Ceroma*, both genera not previously recorded from South Africa, and one new species of *Hexisopus*. The male of the last-named remarkable genus is here described for the first time.

The following is a synopsis of the South African genera:—

- a.* Tarsus of IV. leg without claws *Hexisopus*, Karsch (p. 381).
- b.* Tarsus of IV. leg with two claws.
 - a'*. Tarsi of II.–IV. legs 2-jointed *Ceroma*, Karsch (p. 394).
 - b'*. Tarsi of II.–III. legs 2-jointed, of IV. leg 4-jointed. *Daesia*, Karsch (p. 388).
 - c'*. Tarsi of II.–III. legs 4-jointed, of IV. leg 7-jointed.

Solpuga, Licht. (p. 401).

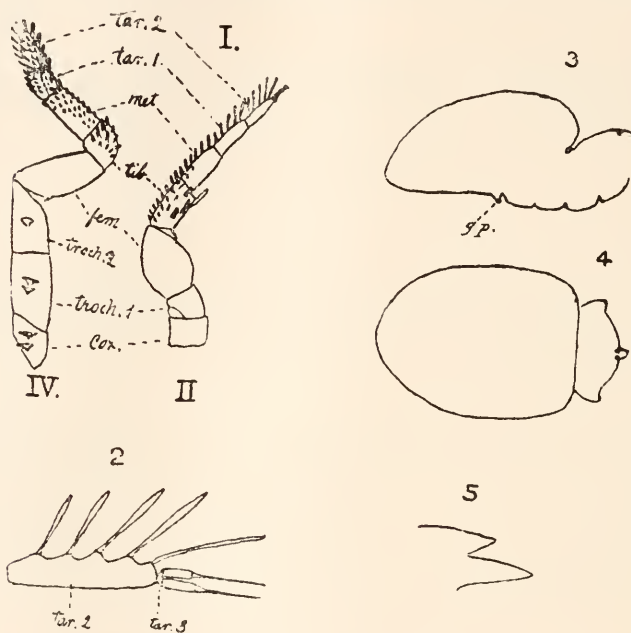
GEN. HEXISOPUS, Karsch.

1842. *Allopus*, C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 354.

1879. *Hexisopus*, Karsch, Ent. Zeit. Stettin, xl., p. 109.

Characters.—Thorax and abdomen enormously distended above and indistinguishably united to a single oval piece (the thoraco-abdomen), lying above the posterior pairs of legs. Palps short and thick, the tarsus immovably fused with the metatarsus, which is without spines or scopula. I. leg thin and slender, unarmed and

without claws. II. and III. legs (fig. 1 II.) with 7 and 8 free segments respectively (the II. with 1, the III. with 2 trochanter segments); the femora (sixth segment from the distal end) short and very stout, especially in the male, with convex surfaces; the terminal tarsal segment extremely minute, bearing a pair of long, smooth, two-jointed claws, and often hidden amongst the hairs of the preceding segment, the distal joint of the claws subequal to



Hexisopus lanatus (Koch). Fig. 1, II. and IV. right leg of ♀, seen from below (the anterior side is on the right, the posterior on the left of each figure). Fig. 2, distal joints of II. leg of ♀, seen from above, and much magnified. Fig. 3, median section of ♂ in outline, g.p. genital papilla. Fig. 4, outline of same ♂ seen from above. Fig. 5, rostrum (the stiff hairs at the apex not sketched in).

or even longer than the basal joint (fig. 2); no subungual appendages. IV. leg with 7 free segments (including 2 trochanter segments); the femur (third free segment) sub-cylindrical; the tibia very short, functioning as patella; metatarsus tibia-like; tarsal segments 2, without claws (fig. 1 IV.). Ocular tubercle much more prominent anteriorly in the male than in the female, provided with numerous hairs. Flagellum of male hidden between the mandibles, the basal portion enlarged in the form of an open cup,

which is attached at a point on its convex side to the inner side of the mandible, and is movable in a vertical plane round the point of attachment (fig. 6). Spiracles 4, large, exposed, situated on the II. and III. ventral abdominal segments near their hind margins, the anterior pair a little closer together than the posterior pair. I. abdominal segment of the adult male provided below with a large, sub-conical, genital papilla (fig. 3, *g.p.*), bearing at its apex the sexual orifice. Ribbed area on inner face of mandibles very large, the ribs very long, extending right up to the base. Rostrum short, the upper lobe evenly pointed and not deflexed at the apex (fig. 5), with the usual double row of adhering hairs at the apex below (not drawn in the figure); the two lower lobes of the rostrum contiguous to the apex, much longer than the upper lobe, strongly compressed laterally, hairy, and furnished with the usual pair of sub-apical feathery lingulae.

The above diagnosis of the genus applies to the two species described below, and probably also to *H. jodiens* Sim., which is unknown to me. The enormous thoraco-abdomen is very peculiar, and is similarly formed in the adult male and female and in the young. Although the tergal segments are distinctly demarcated by transverse lines, it is not easy to point out which of these lines forms the boundary between the thoracic and the abdominal terga. The anterior side of the thoraco-abdomen rises almost directly from the hind edge of the head-plate, which it slightly overhangs (see figs. 3 and 4). Five malleoli are present on each hind leg in the adult, viz., two on the coxa, two on the first trochanter joint, and one on the second trochanter joint (fig. 1 IV.). In the young specimen of *H. lanatus* (Koch), measuring $13\frac{1}{2}$ mm. in length, only three are present, viz., two on the coxa, and one on the first trochanter joint. According to Simon, *H. jodiens*, Sim., has only three malleoli, and this statement has been utilised by Pocock in characterising his new family *Hexisopodidae* (Ann. Mag. N. H. (6), xx., p. 250, 1897). Simon's specimen is, however, evidently immature, the length of the specimen in the figure being given by a line measuring not quite 14 mm.* (Ann. S. Ent. Fr. (6), vii., Pl. vi., figs. 6 and 7†, 1887).

The principal points in which these remarkable Arachnids differ

* In the text, however, the length is given as 23 mm., but this may be a misprint for 13 mm.

† A peculiarity of these two figures of Simon's should not be passed unnoticed, viz., the omission of the first tarsal segment in the II. and IV. pairs of legs, although it is plain from the text that this segment should be present. In fact, the segmentation of the legs in *jodiens* is evidently similar to that of *lanatus* and *crassus*.

from the Solpugidæ may be summed up as follows: (1) the absence of one joint of the trochanters in each leg of the three posterior pairs; (2) the absence of claws in IV. leg; (3) the extreme shortness of the distal portion of IV. leg in proportion to the basal part (trochanters+coxa); (4) the length of the distal segment of the claws in the II. and III. legs; (5) the minuteness of the third tarsal segment in these legs; (6) the absence of subungual appendages in these legs; (7) the presence of a genital papilla in the male; (8) the shortness of the upper lobe of the rostrum.

The females of the two Cape species known to me may be distinguished as follows:—

- a. Upper fang of mandibles strongly compressed laterally, sharp-edged above.
 Bushmanland *H. lanatus* (Koch)
 b. Upper fang thick, rounded and simply convex above. Worcester.
H. crassus, n. sp.

HEXISOPUS LANATUS (Koch).

(Figs. 1-7b.)

1842. *Aellopus lanata*, C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 354.

1848. *Aellopus lanata*, C. L. Koch, Die Arachn., xv., p. 102, fig. 1489.

*Colour** yellow to whitish yellow, the terminal fangs of the jaws red with black tips and edges; eyes with a black ring round each. *Pubescence* remarkably soft, very thick, covering whole animal, the shorter hairs mostly reddish, the longer ones mostly paler; the hairs on the anterior thoraco-abdominal segments dark brown; tips of the palps with orange-brown hair in the ♀; the anterior part of the head-plate and the ocular tubercle with a number of short black hairs in the ♂, which are absent in the ♀ and young; no spines or spiniform setæ on the head-plate or mandibles. *Ocular tubercle* projecting far beyond the anterior margin of head-plate in the ♂, but less prominent in the ♀, a line joining the anterior margins of the eyes lying behind the middle of the tubercle in the ♂, but in the middle in the ♀ (figs. 6a and 7a).

Mandibles in ♀ and young (figs. 7, 7a) stout and rather short, the hairless area at the base of the upper fang large, bordered by a semi-circle of small red granules and nearly smooth; terminal fang of upper jaw strongly compressed laterally, curving outwards and

* These specimens, which I had described as new, were kindly identified from Koch's type by Prof. K. Kraepelin.

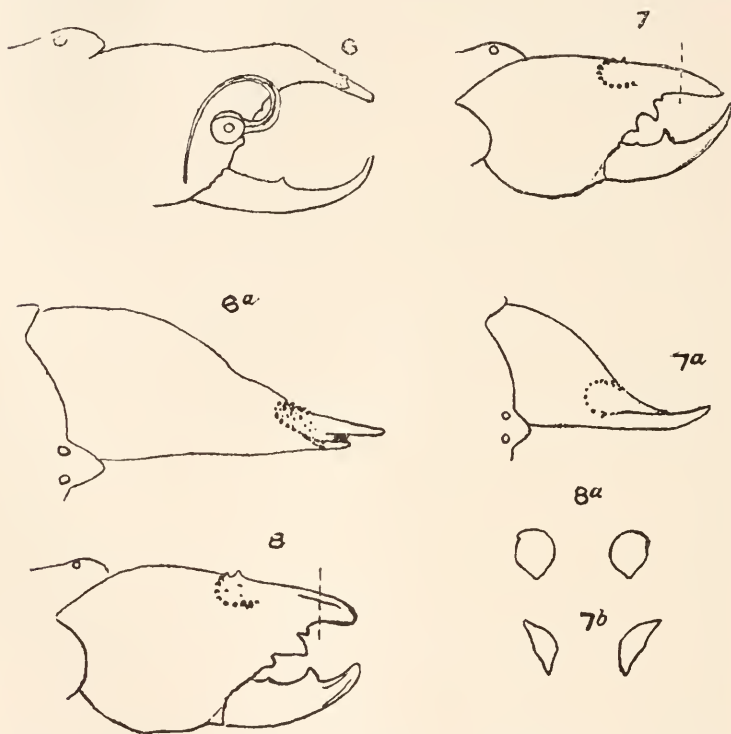
directed slightly downwards from the base, the outer side strongly flattened and not vertical but inclined upwards and outwards from the inferior to the superior edge of the fang (see fig. 7*b*); inner surface of the fang strongly convex, subangular longitudinally along the middle, from whence the surface strongly slopes upwards and outwards as far as the superior edge, the upper surface being horizontal only quite at the base; superior edge of fang sharp, forming the highest part of the upper side. Upper jaw with 3 teeth in the single series, the first very small, the second very large, the third rather small; the double series composed of 3 small inner teeth, and about 9 very minute outer ones, all placed very far back, extending round the base of the lower jaw. Lower jaw curved outwards and strongly upwards towards the apex, with 2 teeth, the anterior tooth large, the posterior one minute (in one of the jaws the large tooth bears a minute denticle at its base in front; see fig. 7).

Mandibles in ♂ (figs. 6, 6*a*) much larger and stouter, the area at the base of the upper fang small and minutely granular over its surface; terminal fang directed downwards but scarcely outwards, compressed and rather flat on each side, not sharp-edged above; the basal half of the fang strongly dilated inwards, the dilated part sulcate above, with the upper median edge granular, terminating anteriorly in a strong angle against which the lower jaw closes. Upper jaw with two small, isolated, posterior teeth in the single series, the uppermost very minute, situated alongside of the anterior bend of the flagellum (both teeth are shown in fig. 6, one above and one below the procurent portion of the flagellum); the double series composed of 3 inner and about 7 outer teeth, and very far back. Lower jaw long, curved strongly upwards but not at all outwards, with one low tooth in the middle.

Flagellum completely hidden between the mandibles. Basal enlargement in the form of a thin-walled cup with thin circular rim and movably attached at the centre of the convex surface to the lower part of the inner face of the upper jaw, almost just behind the lowest of the two teeth in the single series; concavity of the cup facing inwards and partially covered by a narrow thin lamina in the upper part. From the anterior edge of the cup a procurent portion of the flagellum, exceeding the diameter of the cup in length, takes its origin and is provided along its lower edge with a high, thin keel. On about a level with the hind edge of the granular area at the base of the upper fang the flagellum curves upwards and then backwards, as in *Solpuga*; the recurrent portion subulate, curving downwards posteriorly and

terminating just behind the base of the lower jaw at a little distance behind the basal cup, its upper side feebly sulcate, the sulcus continued over the anterior curve, the outer wall of the sulcus higher than the inner and continuous with the inferior keel of the pro-current portion.*

Palp and legs in ♀.—Palps stout, unarmed: I. leg very slender,



Hex. lanatus (Koch). Fig. 6, left mandible of ♂ from inner side. Fig. 6a, left mandible of ♂ from above. Fig. 7, right mandible of ♀ from lateral side. Fig. 7a, left mandible of ♀ from above. Fig. 7b, section through the terminal fangs of both upper jaws of ♀ at the dotted line in fig. 7.

Hex. crassus, n. sp. Fig. 8, right mandible of ♀ from lateral side. Fig. 8a, section through the terminal fangs of both upper jaws of ♀ at the dotted line in fig. 8.

unarmed; II. and III. legs robust (figs. 1 II. and 2), provided along the upper posterior margin from the tibia onwards with a row of blunt spines, which are very short and stout on the tibia, but increase regularly in length distally, the longer ones spatulate,

* A very similar sulcus and keel occurs in *Ceroma*.

those on the second tarsal joint slender; besides these there are a number of similar spines on the posterior and under side of the tibia, the upper ones being very short, the inferior long and spathulate; posterior side of metatarsus of III. leg with a few short, stout, dark spines; posterior side of metatarsus of II. leg, and of the first tarsal joint of III. leg with a few very minute spinules; metatarsus and first two tarsal joints of II. and III. legs with a row of stout bristles below (not sketched in the figures). Femur of IV. leg (fig. 1 IV.) with some stout bristles and a few short apical spines below, tibia and metatarsus with numerous very short, stout spines on the under and anterior sides, the apical ones longer, the two tarsal joints with similar spines below but, in addition, bordered along the anterior and posterior edges with a row of longer very strong spines, the spines of the anterior row stronger than those of the posterior row. In ♂.—Very similar to the ♀, except that the spines of the anterior row on the tarsus of IV. leg are much longer and slenderer than in the ♀.

Locality.—(a) One ♂ and 1 ♀ from Grasmond, on the road between Steinkopf and Ramonds Drift, Namaqualand Div. (Max Schlechter, Nov., 1897).

(b) 1 juv. from Vuurdoord, near Ramonds Drift, Bushmanland, Namaqualand Div. (Max Schlechter, Dec., 1897).

Measurements.—Total length ♂ 20, ♀ 19½; length of thoraco-abdomen ♂ 13½, ♀ 12½, width ♂ 10½, ♀ 9, height ♂ 8½, ♀ 7½; length of head-plate ♂ 4½, ♀ 4, width ♂ 6½, ♀ 5¾; length of mandibles ♂ 6½, ♀ 4⅔, width ♂ 3¼, ♀ 2⅔.

HEXISOPUS CRASSUS, n. sp.

(Figs. 8, 8a.)

Very similar to the ♀ of *H. lanatus*, from which it differs mainly as follows:—

Hairs pale yellowish, none reddish, those at the anterior end of the thoraco-abdomen slightly brownish, the hairs at the apex of the palps darkened but not orange.

Head-plate relatively shorter and wider.

Mandibles with the oval area at the base of the upper fang weakly granular over its surface, the marginal circle of granules coarser and more numerous. The upper fang stout, much less compressed, slightly curving outwards and downwards; the inner surface evenly convex; the upper surface wide, evenly convex, neither sulcate,

carinate, nor angular; the outer surface convex, sub-angular along its middle, finely caniculate at base just under the upper edge; the teeth as in *lanatus*. Lower jaw curved slightly outwards and also upwards, but much less strongly than in *lanatus*. In both upper and lower jaw the apex is very blunt, but this is probably due to age and wear.

Spines on legs as in *lanatus*.

Measurements.—Total length 25; length of thoraco-abdomen 18, width 13, height 12; median length of head-plate $4\frac{1}{3}$, width $6\frac{3}{4}$; length of mandibles 5, width $2\frac{3}{4}$.

Locality.—A single ♀ from Worcester (*J. Lycett*, No. 1033).

GEN. DAESIA*, Karsch.

1880, Arch. f. Naturg., xlvii., Bd. i., p. 234.

Characters of the South African Species.—Basal segmentation of legs as in *Ceroma* and *Solpuga*, i.e., with two trochanter joints in the II. and three in the III. and IV. legs. Tarsi of II. and III. legs two-jointed, that of IV. leg four-jointed, the subungual appendages small, not diverging. Tarsus of I. leg without claws in either sex. Tarsus of palp very slightly movable in the ♀ (apparently immovable in the single ♂ specimen), the metatarsus not scopulate, but provided below with 3 short outer and 1 (in the ♀) or 3 (in the ♂) short inner spines, and generally also some much longer spines or spiniform setæ in a row with the short spines; † metatarsus distinctly compressed from above and below, appearing sub-fusiform when viewed from the side, being slightly thicker in the middle than at the ends (fig. 10a). Ocular tubercle with several bristles in front. Flagellum of ♂ with the basal enlargement flat, not turgid, produced posteriorly into the shaft and fixed to the inner side of the mandibles behind the base of the terminal fang in such a manner as to be partially movable in a vertical plane round the point of attachment (as in *Hexisopus*). Upper lobe of rostrum (fig. 9c) not deflexed at the apex but evenly pointed, as in *Solpuga*.

DAESIA LEIPOLDTI, n. sp.

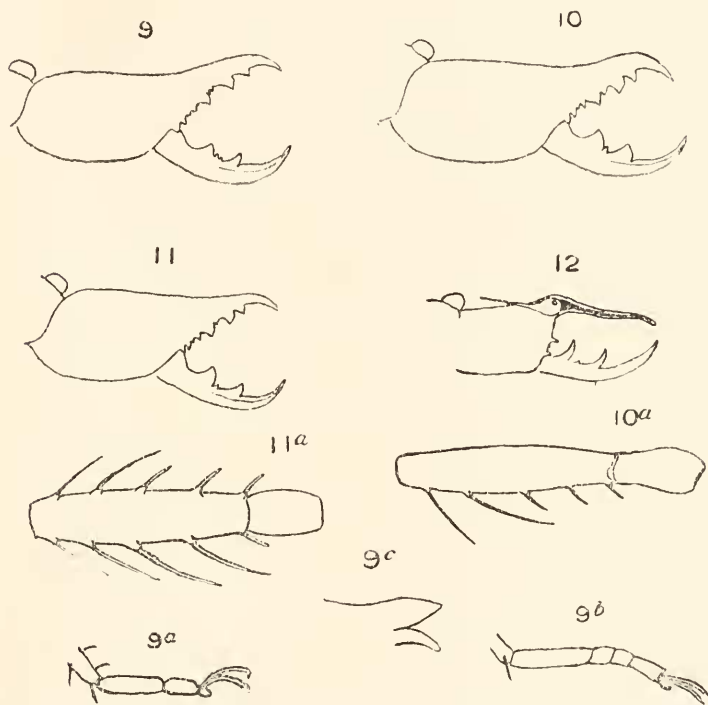
(Figs. 9-9c.)

♀.—*Palps* with the metatarsus slightly but distinctly stouter in the middle than at the ends, depressed from above and below;

* Prof. Kraepelin informs me that *Daesia* and *Biton* are identical.

† The typical arrangement of these spines is shown in figs. 10a and 11a.

tarsus incrassated towards the apex when seen from the side, its length about one-third that of the metatarsus. Under side of femur with long setæ, an anterior row of 4 slightly stouter than the rest; under side of tibia with an anterior row of 2 and a posterior row of 3 stout setæ very distinctly set off from the rest and equalling the



Daesia leipoldti, n. sp. ♀. Fig. 9, right mandible from lateral side. Fig. 9a, tarsus of II. and III. leg. Fig. 9b, tarsus of IV. leg. Fig. 9c, rostrum (the stiff tuft of hairs at the apex not sketched in).

D. kolbei, n. sp. ♀. Fig. 10, right mandible from lateral side. Fig. 10a, metatarsus and tarsus of right palp from posterior (outer) side.

D. pallida, n. sp. ♀. Fig. 11, right mandible from lateral side. Fig. 11a, metatarsus and tarsus of right palp from below.

D. subulata, n. sp. ♂. Fig. 12, left mandible from inner side.

short metatarsal spines in thickness; metatarsus with an outer row of 3 strong short spines (one in the middle of the segment, one at the apex, and one midway between these two) and an inner one of 1 similar apical spine, but there are no distinct series of spiniform setæ similar to those on the tibia, all the setæ being much slenderer than those on the latter. Metatarsus of II. leg with 5 short dorsal

spines, also 1 posterior and 2 anterior spines (including an apical inferior pair); metatarsus of III. leg with 3 short, very stout, dorsal spines, also an anterior row of 2 and a posterior row of 3 slenderer spines (including an apical inferior pair); the tarsi of these legs and the distal segments of the IV. leg with several spines; no apical spines on the tibiae.

Mandibles stout and bristly. Upper jaw with 3 large teeth in the single series and 2 minute teeth between the second and third large ones; the terminal fang strongly curved downwards, but only slightly outwards, at the apex. Lower jaw with 2 strong teeth and a pair of minute ones between them.

Colour.—Ground colour pale yellow. Head-plate with the lateral part broadly infusate, the central and posterior parts occupied by a large, 3-lobed, foliaceous area, which is marmorate at the sides but simply yellow and provided with a fine, brown, longitudinal line along the median part; ocular tubercle deep black, flanked on each side by a marbled yellow area. Mandibles with 3 longitudinal infusate stripes (2 dorsal and 1 lateral) on a reddish yellow background, finely marbled between the stripes; the dorsal stripes expanded distally and united here to form an obliquely transverse distal stripe, the innermost stripe with a yellow distal spot; the lateral stripe obsolete anteriorly. Abdomen pale, the anteriormost terga with a median and a pair of lateral black stripes. Palps blackened, the trochanters and the outer and upper surfaces (except in the distal part) of the femur pale yellow, the upper surface of the tibia and of the distal part of the femur marmorate on each side of the middle line. Legs infuscated, except on the under side, on the posterior side of the femora, and on the upper and posterior sides of the trochanters, where they are pale yellow; in the femora and tibiae the upper surface is partially marmorate.

Measurements.—Total length $17\frac{1}{2}$; length of head-plate 3, width 4; length of mandibles $4\frac{3}{4}$; length of palps $12\frac{1}{3}$, tibia $3\frac{2}{3}$, metatarsus + tarsus $4\frac{1}{4}$; length of III. leg 10; length of IV. leg $17\frac{1}{4}$, tibia $4\frac{1}{4}$, metatarsus $3\frac{1}{4}$.

Locality.—(a) A female (type, No. 3791) from Olijvenbosch Kraal, near the Berg Vlei River, north of the Piquetberg Range, Clanwilliam Div.

(b) A female from Lamberts Bay, Clanwilliam Div. (*R. Pattison*, Nov., 1897), differs from the type in having only 1 small tooth between the 2 large ones in the lower jaws, and there is 1 small tooth in one, but 2 in the other upper jaw between the second and third large teeth.

The type was obtained for us through Mr. C. L. Leipoldt, to whom the Museum is indebted for a large number of new and rare Arachnida from the Division of Clanwilliam.

DAESIA KOLBEI, n. sp.

(Figs. 10, 10a.)

♀. *Colour*.—Head-plate marked as in *leipoldti*, but slightly darker. Mandibles as in *leipoldti*, except that the dark lateral stripe is obsolete; the sides, however, marmorate. Abdomen pale yellowish, the terga broadly but palely infusate at the sides and in the middle. Palps with the metatarsus and tarsus deeply infusate, the tibia pale brownish, yellowish at the ends, the remaining segments pale yellow. Legs pale yellow; I. leg infusate above in the two distal segments; II. and III. legs with the femora and tibiæ partially pale infusate; femur of IV. leg infusate, the upper side marbled on each side of the middle line, the inner side (except at base) and the under side yellow, the tibia (excepting below and at the apex) infusate, marbled above, the metatarsus infusate in the middle on the upper and outer surfaces. Malleoli pale, the leg segments bearing them with a short black line at the base of each malleolus.

Palps with the metatarsus more distinctly fusiform and relatively stouter than in *leipoldti* (fig. 10a); the tarsus incrassated distally, when seen from the side, and relatively stouter than in *leipoldti*. Under side of femur with a very distinct anterior row of 4 stout spiniform setæ, of which the distal one is strongest; the setæ along the posterior edge feeble. Under side of tibia with 2 very distinct rows of long and very stout spiniform setæ, 3 in each row. Under side of metatarsus with an outer row of 3 distal spines and 2 long proximal setæ and an inner row of 1 apical spine and 4 setæ; the spines short and stout, disposed as in *leipoldti*, the setæ long, stout, and spiniform, very distinctly seriate and sharply set off from other setæ on the joint, the 3 distal setæ of the inner row quite as stout as those on the tibia, the basal one of this row slenderer. Spines on the legs as in *leipoldti*.

Dentition.—One small tooth between the 2 large ones in the lower jaw; between the second and third large teeth of the upper jaw there is 1 small tooth in one jaw but 2 in the other, just as in the specimen of *leipoldti* from Lamberts Bay.

Measurements.—Total length $19\frac{1}{2}$; length of head-plate 3, width 4;

length of mandibles $4\frac{3}{4}$; length of palps $11\frac{1}{2}$, tibia $3\frac{1}{2}$, metatarsus + tarsus 4.1; length of III. leg 10; length of IV. leg 16, tibia 4, metatarsus 3.

Locality.—A single ♀ (No. 1181) from Buluwayo, Matabeleland, collected by the Rev. Dr. F. Kolbe, of St. Mary's, Cape Town, to whom the Museum is indebted for two new species of Solifugæ.

DAESIA PALLIDA, n. sp.

(Figs. 11, 11a.)

Colour.—Whole animal very pale yellowish; ocular tubercle deep black; the 3 distal segments of the palps infuscated, except on the under side, which is pale yellowish, the femur marmorate above on each side of the middle line; IV. leg feebly infuscate above at the apex of the femur and at the base of the tibia; jaws of mandibles reddish, black at the tips. Coxa and trochanters with black markings at the insertion of the pallid malleoli.

Palps.—Metatarsus and tarsus shaped and proportioned as in *kolbei*. Under side of femur with an anterior row of 4 and a posterior row of 2 spiniform setæ, all very distinctly set off from the other setæ on the joint, the distal anterior one much larger than the others; under side of tibia with two rows of long setiform spines (3 in each row), which are remarkably stout with the exception of the posterior basal one. Under side of metatarsus (fig. 11a) with 2 rows of 4 short spines and 6 long setiform spines, arranged as in *kolbei*; the basal pair are strong but slenderer than the other setiform spines, which are remarkably strong and stout, especially those of the anterior row. Short spines on the legs as in *leipoldti* and *kolbei*, excepting that there are 4 posterior spines on the metatarsus of III. leg, the two proximal ones close together.

Dentition.—Only 1 small tooth between the second and third large teeth in the upper jaw and 1 between the 2 large teeth in the lower jaw—otherwise as in the preceding species; terminal fang of upper jaw less strongly curved than in the preceding form.

Measurements.—Total length $13\frac{1}{2}$; length of head-plate 3, width $3\frac{1}{2}$; length of mandible $4\frac{1}{2}$; length of palps 12, tibia $3\frac{1}{2}$, metatarsus + tarsus 4.1; length of III. leg $9\frac{3}{4}$; length of IV. leg $17\frac{1}{2}$, tibia $4\frac{1}{4}$, metatarsus 3.

Locality.—A single specimen (♀ or immature? No. 2832) from Eities in Great Bushmanland, Kenhart Div. (Max Schlechter, March, 1898).

This species is characterised by the remarkably strong armature on the under side of the palps.

DAESIA SUBULATA, n. sp.

(Fig. 12.)

♂. *Colour*.—Ground colour pale yellowish. Head-plate with the lateral parts broadly infuscate, the lateral border, a spot on each side of the deep black ocular tubercle, and the large, 3-lobed, foliaceous, central area pale yellowish, the latter area faintly marmorate towards the sides and provided with a fine median line. Mandibles very pale yellow, without any infuscate markings, but with numerous, short, spiniform setæ. Abdomen with pale purplish tinge, the anterior segments pale yellow, all the terga infuscated at the lateral borders but not along the median line. Palp with the distal part of femur (excepting on the inner side), the tibia, metatarsus and tarsus deeply infuscate, the two latter with a broad pale streak on the under side, the tibia with a similar streak in the basal two-thirds below and with its upper surface marbled on each side of the middle line. I. and II. legs pale yellow, the tibiæ with the sides feebly infuscated at the base; III. leg with the femur and tibia (excepting below) and the sides of the metatarsus at the base infuscate, the upper surface of the femur and tibia marmorate; IV. leg with the femur (except at the base below), the tibia (excepting below) and the basal part of the metatarsus (excepting below) infuscated, the femur and tibia marbled above on each side of the middle line.

Palps with the metatarsus and tarsus shaped as in *leipoldti*; metatarsus below with two rows, each composed of 3 short stout spines and 2 proximal setæ; the spines of the outer row arranged as in *leipoldti*, but in the inner (anterior) row the middle spine is nearer to the distal than to the proximal spine; the two setæ completing the rows on each side are slender, not at all spiniform, and much finer than the seriated setæ on the tibia. Under side of tibia with an inner row of 3 spiniform setæ (the proximal one shorter and slenderer than the other two but stouter than the corresponding seta in *leipoldti*) and an outer row of about 5 setæ, of which the distal one is slightly, the proximal one considerably, slenderer than the middle spiniform ones; under side of femur with an inner row of about 4 spiniform setæ.

Short spines on the metatarsi of II. and III. legs as in *leipoldti*.

Mandibles with the upper jaw composed of a sub-quadrate (when

seen from the side) basal portion, produced at its upper anterior angle into a long, slender, toothless, terminal fang. This fang is almost straight and subulate, very slightly sinuous above in the middle and again below at the apex, and is slightly inclined outwards from its base; it forms an angle of about 150° with the upper surface of the mandible; its outer surface is convex but the inner surface is deeply sulcate throughout its length. The anterior almost truncated surface of the basal portion of the jaw is sinuate in the upper part and nearly at right angles to the fang, while in the lower part it is furnished with a double row of teeth, the outer row being composed of 4 teeth, the second tooth being very small. Lower jaw slender, curved strongly upwards towards the apex, provided with 2 long and rather slender sharp teeth with a minute denticle between them.

Flagellum composed of a transparent, pear-shaped, flattened disc, drawn out behind into a straight subulate shaft, which exceeds the disc in length and is directed backwards and slightly upwards. The disc is attached, scale-like, to the inner surface of the mandible at its upper edge just behind the base of the fang in such a manner that the lower half and the upper edge of the vertical disc is free, the edge projecting slightly above the upper surface of the mandible.

Measurements.—Total length $16\frac{1}{3}$; length of head-plate 3, width $3\frac{1}{4}$; length of mandibles 4; length of palps 14, tibia $4\frac{3}{4}$, metatarsus + tarsus $4\frac{3}{4}$; length of III. leg $10\frac{3}{8}$; length of IV. leg $21\frac{1}{2}$, tibia 5, metatarsus $4\frac{1}{2}$.

Locality.—A single ♂ (No. 3802) from Van Wijks Vlei, Carnarvon Div. (*E. G.* and *D. C. Alston*, 1899), captured in a house at night.

GEN. CEROMA, Karsch,

1885, Karsch, Jahrb. Hamburg. Anst., p. 137.

Characters of the South African Species.—Tarsi of II.–IV. legs two-jointed, with very long, strongly diverging, sub-ungual appendages (fig. 13*b*). Tarsus of I. leg with 2 small but distinct claws in both sexes. Short stout spines occur only on the II. and III. legs, viz., 1 at the apex of the tibia and 3 on the upper side of the metatarsus (in *C. inerme* these spines are very weak); long spiniform setæ occur on the legs and palps, those on the under side of the tibia of the latter arranged in two distinct series (*sclateri*, *capense*) or more irregular (*inerme*). Tarsus of palp immovably fused to the metatarsus, the latter (fig. 13*a*) cylindrical or very slightly depressed from

above, not attenuated distally, where it is as thick as in the middle, the under surface without true spines or scopula. Basal enlargement of flagellum (figs. 13 and 14) protected by a row of stiff bristles, turgid on the median side but flat on the lateral side, by which it is immovably fixed to the inner surface of the base of the terminal fang; the basal enlargement produced upwards into the shaft (not forwards as in *Solpuga*). Ocular tubercle with a number of fine bristles, especially in front. Upper lobe of rostrum either evenly pointed at the apex, as in fig. 13c (*sclateri*, *incerne*), or the apex unevenly pointed, the lower side being straight and the upper convex (*capense*, fig. 15b).

CEROMA SCLATERI, n. sp.

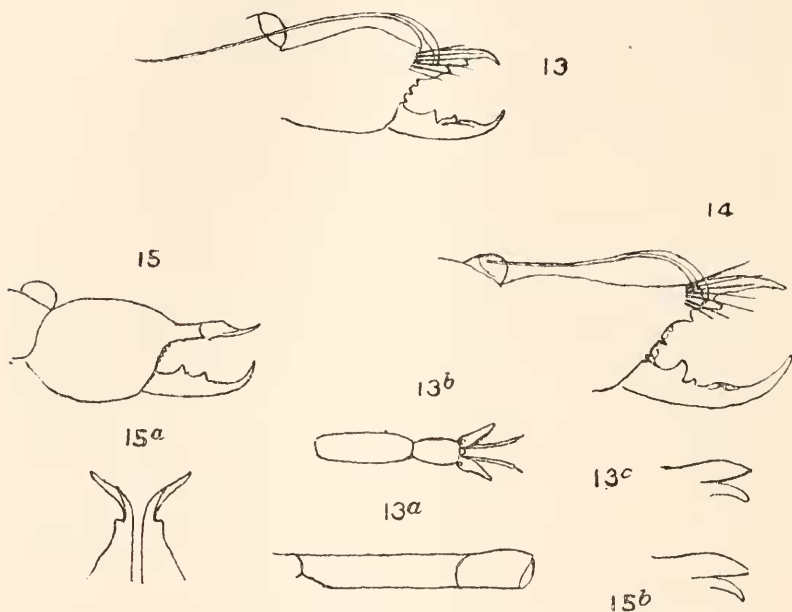
(Figs. 13-13c.)

♂.—*Flagellum* extremely long, reaching, when straightened out, almost to the hind margin of the head-plate. Basal enlargement pear-shaped, somewhat laterally compressed, deeply sulcate on its anterior side, the sulcus bounded laterally by a high thin keel and on the median side by a lower, thicker ridge; the basal enlargement situated at the base of the upper fang on its inner side and protected on the median side by a row of long, stiff, feathery hairs which reach to the apex of the fang. Basal portion of flagellum tapering gradually upwards and then backwards into the slender filiform shaft, which passes along the middle of the upper surface of the mandible and on the lateral side of the eye-tubercle, behind which it curves gradually towards the median line. The anterior sulcus is continued backwards along the upper surface for some distance, while the lateral keel bordering this sulcus may be traced almost to the apex of the flagellum.

Mandibles gibbous above, the upper jaw with the terminal fang rather long, curved downwards at the apex, which is remote from the base of the flagellum. First tooth strong, closely followed by a second equally strong tooth, the basal part of which is prolonged posteriorly in the form of a long low ridge; this is followed by the small outer teeth of the double series; the first tooth of the inner series long and slender (inner series not drawn in fig. 13). Hind tooth of lower jaw large and strong, preceded by a smaller tooth; immediately in front of the latter is a long low keel confluent with the base of the smaller tooth; on the median side of this tooth and keel is a second keel, running along the inner edge of the upper side

of the jaw and directed upwards and inwards, forming a deep sulcus with the outer keel.

Tarsi of the legs with the terminal segment short, slenderer than the first segment, from which it is separated by a strong constriction; the sub-ungual appendages very long and turgid, somewhat attenuated towards the apex and strongly diverging, half as long



Ceroma sclateri, n. sp. ♂. Fig. 13, left mandible from inner side (the flagellum is purposely drawn on the right of the eye-tubercle to show its course). Fig. 13a, metatarsus and tarsus of palp from the side. Fig. 13b, tarsal joints of II. and III. leg. Fig. 13c, rostrum (apical tuft of hairs not sketched in).

C. inermis, n. sp. ♂. Fig. 14, left mandible from inner side (the flagellum is drawn as if on the right side of the eye-tubercle to show its length).

C. capense, n. sp. ♀. Fig. 15, right mandible from lateral side. Fig. 15a, apical part of both mandibles, from above. Fig. 15b, rostrum (apical tuft of hairs not sketched in).

as the basal joint of the claws and provided with a very noticeable, deep-black, basal spot above (fig. 13b). Tarsus and metatarsus of palp stout, straight, not curved below, the former very slightly incrassated above (fig. 13a). Tibiæ of II. and III. legs with one short apical spine, the metatarsi of these legs with 3 short, stout, dorsal spines; no other short spines are present on any of the legs,

but the under side of the 3 posterior pairs are provided with long, curved, spiniform setæ. Tibia of palps with two rows of very long, strong, flexible setæ below, 4-5 in each row; the metatarsus without distinctly seriated setæ. I. leg provided with a pair of small claws, but without sub-ungual appendages.

Ocular tubercle large, strongly projecting anteriorly.

Colour and markings very like those of *C. ornatum*, Karsch. Ground colour pale yellow, that of the mandibles testaceous yellow. Head-plate and the limbs (excepting below and at the base) partly marbled with dark brown, partly infusate. Mandibles with 1 lateral and 2 dorsal, narrow, longitudinal, infusate stripes, the parts between these stripes testaceous yellow and only partially marmorate. Head-plate infusate in the lateral parts, except along the border, which is yellow; the central region marmorate; a median stripe extending from the hind margin to the ocular tubercle yellow but not marbled, divided longitudinally by a fine infusate line and expanded in the middle and again anteriorly, where it extends round the hind edges of the tubercle in the form of a short transverse arm, which ends on each side in an enlarged, somewhat four-sided, yellow spot. Ocular tubercle black. Terga of abdomen pale yellow, with a large black patch on each side and a fine, median, black stripe, the lateral patches longitudinal in the anterior but transverse in the posterior segments; the soft skin on the sides of the abdomen infusate, thickly covered with minute yellow dots and whitish yellow hairs. Upper surface of the femora of palps and legs, and of the tibiae of the palps and anterior legs yellowish, marmorate, provided with a longitudinal infusate stripe along the middle. Mallioli black-edged. Whole animal covered with whitish yellow hairs, which are not forked at the apex.

Measurements.—Total length 17; length of head-plate 3, width $3\frac{1}{3}$; width of eye-tubercle 1.1; length of mandibles $3\frac{3}{4}$, width $1\frac{2}{3}$; length of flagellum (straightened) $5\frac{1}{4}$; length of palp 12, tibia $3\frac{3}{5}$, metatarsus + tarsus $4\frac{1}{2}$; length of III. leg $11\frac{1}{2}$; length of IV. leg 19, tibia 5, metatarsus $3\frac{1}{2}$.

Locality.—1 ♂ (type, No. 2840) from Houwhoek, Caledon Div., captured by Mr. W. L. Selater.

A young specimen, 10 mm. long and evidently belonging to this species, was taken by me at Ashton, Robertson Div. It has the sides of the abdomen pale yellow and the median dorsal stripe is obsolete. The single row of teeth in the upper jaw consists of 2 large, curved, distal teeth, followed by a minute and another large tooth, while the lower jaw has 2 large curved teeth and a small

tooth between these; the upper fangs are turned slightly but distinctly outwards towards the apex.

This species closely resembles *C. ornatum*, Karsch, from Massai-land in its colouration.

CEROMA INERME, n. sp.

(Fig. 14.)

♂.—Legs without distinct strong spines, excepting perhaps the apical spine of the tibiæ of the II. and III. legs, those on the upper side of the metatarsi of the II. and III. pair in *C. sclateri* replaced in this species by several (more than 3) strong bristles. The long stout bristles on the under side of the palps not distinctly arranged in two definite series on the tibia (resembling *C. ornatum*, Karsch, in this respect). Metatarsus and tarsus of palps stout and straight, not concave below, becoming scarcely perceptibly thicker distally. I. leg as in *sclateri*. Sub-ungual appendages of tarsi shrivelled up. Ocular tubercle relatively smaller and less prominent anteriorly than in *sclateri*.

Colour.—Mandibles yellow or testaceous, with the 3 longitudinal stripes of the last species faintly marked in one specimen. Head-plate black-ferruginous, paler along the median line and at the posterior and lateral borders; the eye-tubercle black. Legs yellowish, the femora and tibiæ of the III. and IV. pairs, and the palps from the distal portion of the femur to the apex, dark ferruginous, all these segments with a yellow stripe on the under surface; the II. pair of legs darkened at the apex of the femora and at the base of the tibiæ. Malleoli not black-edged. Abdomen wholly ferruginous black, the hairs on the terga very short, yellowish, those on the sides long, white or whitish, silky; the ventral surface densely covered with short, stiff, erect, whitish hairs, all of which have a curious, minutely Y-shaped fork at the apex. Mandibles, head-plate, and limbs thickly covered with very short whitish hairs, with some longer hairs and setæ interspersed amongst them.

Mandibles.—Terminal fang of upper jaw long and slender, gradually curving downwards towards the apex, not sigmoid; the 2 distal teeth strong, remote from the apex, the first just anterior to the front edge of the flagellum, the second normal, not produced backwards at the base in the form of a long keel, but directly followed by the outer series of the double row; these sharp and not very small, the first of the inner row spiniform. Lower jaw with

the posterior tooth large and strong, preceded by a very small tooth (in one jaw there is a minute tooth between these in addition); anterior to the small tooth are a pair of thin keels, one on the inner and one on the outer edge of the upper surface; the inner keel is sub-dentiform and directed upwards and inwards, the outer keel forms a long low ridge directed upwards and in a line with the teeth of the jaw. These two keels are very characteristic.

Flagellum somewhat resembling that of *sclateri* but much shorter, the apical part quite straight and terminating on each side of the ocular tubercle almost in a line with its hind margin. At the anterior bend the flagellum is strongly compressed laterally, but at the basal end it is scarcely enlarged, although provided on the median side with a small inflation (apparently corresponding to that on the outer side of the basal enlargement of *Solpuga*); the basal end protected by a row of stiff feathery bristles, which do not, however, reach the apex of the jaw. The anterior half of the flagellum is minutely sulcate above and in front, the outer keel bounding the sulcus being a continuation of the very high keel at the anterior bend, as in *sclateri*; in its posterior half, however, the flagellum is cylindrical without trace of the keel.

Measurements.—Total length $20\frac{1}{2}$; length of head-plate $3\frac{1}{2}$, width 4; length of mandible 5, width 2; length of flagellum $3\frac{1}{2}$; length of palp 15, tibia $4\frac{1}{2}$, metatarsus + tarsus $4\frac{1}{2}$; length of III. leg $16\frac{1}{2}$; length of IV. leg $24\frac{1}{2}$, tibia 6, metatarsus $4\frac{1}{2}$.

Locality.—Two males (dry, No. 1055) labelled "Walfish Bay," Damaraland (Mr. Cleverley).

CEROMA CAPENSE, n. sp.

(Figs. 15–15b.)

♀. *Colouration*.—Very similar in the markings to *sclateri*, but much less deeply infusate. Mandibles pale yellow, with only one longitudinal infusate stripe (corresponding to the middle one of the three in *sclateri*), not marbled. Head-plate similar to that of *sclateri*, differing only in having the marmorate markings much less distinct, the whole central area thus appearing plain yellow to the unaided eye. Terga and sides of abdomen uniformly pale infusate, the sides not darker than the terga; the sides are paler and the terga darker than the corresponding surfaces in *sclateri*, and the three infusate dorsal stripes are quite absent. Legs marked as in *sclateri*, but the infusation is a little paler, and the legs are pale yellow distally. Malleoli not black-edged.

Palps with the metatarsus and tarsus stout, straight, and equally thick throughout. Armature of the legs and palps and the shape and colouration of the sub-ungual appendages as in *sclateri*. I. leg as in *sclateri*.

Mandibles very bristly, with a dense cluster of reddish bristles on the inner side towards the apex. Terminal fang of upper jaw long and slender, very curiously shaped and divided into two portions: the basal portion, commencing on a level with the first tooth of the inner series and forming about two-fifths of the length of the fang, is hairless, yellowish, slender, almost cylindrical and sharply marked off from the rest of the jaw; it is directed forwards; the distal portion of the fang is a continuation of the median half of the basal portion, the lateral half of the latter terminating abruptly, as if the fang had been transversely cut half-way through its thickness from the lateral side and then the lateral portion of the distal part sliced off by a longitudinal vertical cut (fig. 15a). The distal portion of the fang is dark red and is bent sharply outwards from the base, so strongly that it forms a right angle with the corresponding portion of the other jaw; it is further twisted on its axis so that what is outer surface proximally becomes upper surface distally, while in the region of the twist this surface is strongly concave; the upper margin is, moreover, strongly compressed and forms a sharp-edged keel, which terminates abruptly in an angle at the twist. Dentition of the upper jaw composed of a posterior double series of 3 outer and 3 inner, small, separate teeth, the single series in front of these represented by a low black crenular keel under the basal portion of the fang, but without any separate teeth; the distal portion of the fang without teeth. Lower jaw strongly curved upwards and outwards at the apex and provided with 2 large teeth and 1 small one between them; in one jaw there is another very minute denticle in front of the small tooth; the terminal fang is simple.

Measurements.—Total length $14\frac{1}{2}$; length of head-plate 3, width $3\frac{1}{2}$; length of mandible $3\frac{3}{4}$, width $2\frac{3}{8}$; length of palp $11\frac{1}{2}$, tibia $3\frac{1}{2}$, metatarsus + tarsus 4; length of III. leg $9\frac{2}{3}$; length of IV. leg 16, tibia $4\frac{1}{2}$, metatarsus 3.

Locality.—One ♀ (No. 2843) from Mr. Hertzog's farm "Bergvliet," Constantia area, Cape Peninsula, captured by myself in October, 1896.

GEN. SOLPUGA, Licht.,

1796, Lichtenstein, Cat. rerum nat., iii., p. 216.

Characters.—Tarsus of II. and III. leg four-jointed, of IV. leg seven-jointed, the sub-ungual appendages small and not strongly divaricating. Tarsus of I. leg without claws. Metatarsus of palps appearing thick in the proximal half but attenuated in the distal half, especially when viewed from the side (Fig. 19), the tarsus again thickened and immovably fused with the metatarsus; under side of the latter with a large number of irregularly arranged bristles, made up of short truncated and long pointed ones (in the *lineata* group these bristles, especially the longer ones, are minutely bifid at the apex). Basal enlargement of flagellum flat on the inner side, which is furnished with a narrow posterior border separated by a curved groove from the rest of the surface (Figs. 16, 17, &c.), the outer face turgid in the upper part but immovably fixed in the lower part to the inner upper edge of the mandible at the base of the terminal fang; the basal enlargement produced anteriorly into the procurent portion of the shaft, which is also firmly attached to the upper surface of the terminal fang. Ocular tubercle with more than two anterior setæ. Upper lobe of rostrum evenly pointed, never deflexed at the apex.

Young.—Five very young specimens (?) of *S. vineta*, Koch, from Signal Hill, Cape Town, measuring between 8 and 9 mm. in length, and provided with 5 pairs of malleoli, had the tarsus of the II. and III. legs one-jointed, and that of the IV. leg two-jointed. (In the next smallest specimens, 15 mm. long, these tarsi were jointed as in the adult.) Besides these the Museum possesses several other specimens from various parts of the Colony, most, if not all, of which are perhaps the young of *Solpuga*, although the species cannot be determined. In all of these the tarsi are segmented as in the younger specimens of *S. vineta*. In the smallest example, measuring $8\frac{1}{2}$ mm., there are only 3 pairs of malleoli, but in all the others, the largest of which measures $13\frac{1}{2}$ mm., there are 5 pairs. The metatarsus of the palp, moreover, resembles that of *Ceroma* in not being attenuated distally, although this attenuation was observed in all immature specimens of *Solpuga* which showed the normal number of tarsal segments. The ocular bristles are also much fewer in number, the anterior side of the tubercle generally possessing a large anterior pair, a little behind which a second much smaller pair occurs.

Nearly all the species known to me may be arranged in three

groups, to which a fourth is provisionally added for the reception of a single species of doubtful affinity. These groups appear to be quite natural. The first two differ only in characters confined to the one or the other sex, and are closely related, but the third group appears to stand somewhat apart from the other two.

Synopsis of the identified Species of SOLPUGA in the Museum.

ADULT MALES.

GROUP I.—Upper jaw of mandibles without long toothless spaces, the distal or single row composed of 4-5 teeth in an uninterrupted series.

a. Flagellum distinctly and finely serrated distally along the upper edge.

α^1 . Terminal fang of upper jaw weak, with strong internal tooth. Bushmanland *schlechteri*, n. sp. (p. 411)

b^1 . Terminal fang strong and long, with minute internal tooth. Matabeleland *serraticornis*, n. sp. (p. 409)

b. Flagellum not serrated along upper edge.

α^2 . Flagellum strongly sinuate above near the apex, reaching backwards beyond the middle of the mandible.

α^3 . Flagellum with a strong tooth near the apex. C. Col. (Western Divs.) *lethalis*, Koch. (p. 405)

b^3 . Flagellum not toothed. C. Col. (Central and Eastern Divs.) *venator*, Poc. (p. 407)

b^2 . Flagellum not strongly sinuate at the apex or else very short.

α^4 . Basal enlargement of flagellum very long and low, the upper edge almost straight (slightly concave) for a long distance. Rhodesia (also Delagoa B., Pocock) *monteiroi*, Poc.

b^4 . Basal enlargement high, rounded or keeled above.

α^5 . Flagellum with a short strong tooth near apex. Transvaal *venosa*, n. sp. (p. 412)

b^5 . Flagellum not toothed, cuneiform, much broader than the fang below the anterior bend. Rhodesia .. *cuneicornis*, n. sp. (p. 413)

c^5 . Flagellum not toothed, broadly subulate, narrower than the fang below the anterior bend. Mashonaland *sericea*, Poc.

d^5 . Flagellum extremely short, with a slender inner process and a lobe-like outer process near the apex. Clanwilliam Div. *cervina*, n. sp. (p. 415)

e^5 . Flagellum rod-like, with a long slender process near the apex. Cape Div. *fusca*, Koch. (p. 417)

GROUP II.—Upper jaw with long toothless space in the single series.

*a*⁶. Flagellum remote from the apex of fang.

*a*⁷. Recurrent portion of flagellum serrated along three edges. Cape Div.
vineta, Koch. (p. 420)

*b*⁷. Recurrent portion serrated along one edge only. Namaqualand Div.
spectralis, n. sp. (p. 424)

*c*⁷. Recurrent portion with slender keel but not serrated
rillosa, n. sp. (p. 422)

*b*⁶. Flagellum close to the apex of fang, filiform, minutely cultrate at the apex.

*a*⁸. Flagellum occupying the whole upper width of the narrow fang at the anterior bend. P. Elizabeth *lateralis*, Koch. (p. 425)

*b*⁸. Flagellum occupying only the inner half of the wide upper surface of the fang at the bend *cultrata*, n. sp. (p. 427)

GROUP III.—Upper jaw with an uninterrupted distal or single series, composed of 7–10 teeth. Namaqualand and Carnarvon Divs. *lineata*, Koch. (p. 428)

FEMALES AND NEARLY MATURE YOUNG.

GROUPS I. and II.—Upper jaw of mandibles with 4–5 teeth in the single or distal series, without toothless intervals.

a. Hairs on the posterior tergal plates of abdomen more or less yellowish and sub-similar in colour to those on the sides of the abdomen.

*a*¹. Head-plate marmorate *cervina*, n. sp. (p. 415)

*b*¹. Head-plate not marmorate.

*a*². Dorsal and ventral surfaces of abdomen similarly coloured.

*a*³. Upper jaw with 2 small teeth between the second and third large tooth *lethalis*, Koch. (p. 405)

*b*³. Upper jaw with only 1 small tooth between the second and third large tooth *venator*, Poc. (p. 407)

*b*². Dorsal surface of abdomen black, ventral surface much paler.
serraticornis, n. sp. (p. 409)

b. Hairs on the posterior tergal plates dark-brown to black, those on the sides of the abdomen white to yellow.

*a*⁴. Lower jaw with 2–3 small teeth between the 2 large ones.
fusca, Koch. (p. 417)

*b*⁴. Lower jaw with only 1 small tooth between the 2 large ones. (Sternal plates of the I. abdominal segment produced at the posterior median angles in the adult ♀.) (GROUP II.)

*a*⁵. Hind-legs without a mane.

*a*⁶. Tergal plates of abdomen entirely black-ferruginous, the sides of abdomen with yellowish-white hairs .. *lateralis*, Koch. (p. 425)

b⁶. Anterior tergal plates ferruginous-brown in the middle and blackened laterally, the posterior ones entirely ferruginous-black, the hairs on the sides of abdomen yellowish white, those bordering the tergal plates bright yellow *vineta*, Koch. (p. 420)

b⁵. Hind legs with a distinct mane on upper side . . *villosa*, n. sp. (p. 422)

GROUP III.—Upper jaw of mandibles with the distal series composed of 7–10 teeth.

a⁷. Head-plate with 4, mandibles each with 2 dark stripes above.

lineata, Koch. (p. 428)

b⁷. Head-plate uniformly yellow *brevipalpus*, n. sp. (p. 431)

GROUP IV.—Upper jaw with the anterior tooth far removed from the second tooth, as well as remote from the apex of the jaw

nigro-braccata, n. sp. (p. 431)

I.—*The LETHALIS Group.*

Dentition of upper jaw subsimilar in the two sexes, the distal or single series composed of 4–5 teeth, which are not separated into groups by one or more long toothless intervals (figs. 16–22a).

In the first abdominal sternite the posterior median angles of the halves are rectangular or rounded, but not produced in the adult female. In the male the metatarsus of the palp is distinctly scopulate below for a portion of its length; the upper margin of the basal enlargement of flagellum is obtuse and rounded, or elevated in the posterior part to form an angular ridge (but rarely forming a high thin keel); the terminal fang of the upper jaw is not elevated along the inner edge of the upper side to form a groove for the reception of the flagellum, although often slightly dilated inwards. Palps exceeding, rarely equalling, the III. leg in length. Posterior legs with numerous shorter and a small number of very long hairs, which never form a mane (in *sericea*, Poc., however, the long hairs are very numerous).

Mostly large or very large species of a yellow colour, the upper surface often blackened, the abdominal terga mostly uniformly coloured. The large forms appear to be nocturnal in their habits, but the small *fusca*, Koch, and *sericea*, Poc., which have white silvery hairs on the sides of the abdomen, are diurnal.

The species which belong here are:—

(a) Species with the hairs on the abdomen uniformly coloured (probably all or nearly all nocturnal): *lethalis*, Koch, *venator*, Poc., *schlechteri*, n. sp., *serraticornis*, n. sp., *monteiroi*, Poc., *venosa*, n. sp.,

cuneicornis, n. sp., *cervina*, n. sp.; also the following, which are unknown to me: *ferox*, Poc., *darlingi*, Poc., &c.

(b) Diurnal species with the hairs on the sides of the abdomen white, contrasting strongly (at least in the males) with the dark hairs on the posterior dorsal plates: *sericea*, Poc. (with the upper fang carinate above in the distal half), and *fusca*, Koch.

SOLFUGA LETHALIS, C. L. Koch.*

C. L. Koch, Arch. für Naturg., viii., Bd. i., p. 352, 1842; Die Arachn., xv., p. 70, fig. 1465, ♂ & ♀, 1848.

Flagellum.—Basal enlargement longer than high, semicircular in outline, the superior inner edge rather sharply prominent. Procurrent part of shaft very short, much shorter than the basal enlargement; the anterior face of the bend situated on a level with (*i.e.*, directly over), or only very slightly anterior to, the apex of the first tooth of upper jaw (all specimens from Namaqualand), or much farther forward, about midway between the first tooth and the apex of the jaw (specimens from Clanwilliam and Worcester), while in the specimen from the Paarl the bend is almost directly over the first tooth in one jaw but much more anterior to this tooth in the other jaw. Recurrent portion of shaft very long, reaching, when depressed, to hind margin of eyes or even further back a little beyond the tubercle (the distance of the apex of the depressed flagellum from the hind edge of the eye varying from 0–1¼ mm.); shaft straight or nearly so for the greater part of its length, running nearly parallel to the upper surface of the mandible or more commonly ascending (the distance of the eyes from the nearest part of the flagellum thus varying in spirit specimens from ½ to 1½ times the width of the eye-

* If we exclude Great Bushmanland in the north, I find that all large yellow males from the western Divisions of the Cape Colony have the flagellum toothed near the apex, and all large yellow females from these parts are provided with two small teeth between the second and third large ones in the upper jaw. I am informed by Professor Kraepelin that this western species is identical with *S. lethalis*, Koch. On the other hand, all large yellow males from the Divisions to the east of those inhabited by *lethalis* have an untoothed flagellum, and the large yellow females from these Divisions have only one small tooth in the upper jaw (except in an abnormal case, where there were three small teeth in one of the jaws). This eastern form is *S. venator*, Poc.

As *S. lethalis* and *venator* are the only species of which I have been able to examine a fair number of specimens of both sexes from a number of different localities, I have taken the opportunity to point out the extent of the variations observable in several of the organs, especially as regards length. Information on this point should, I think, be of some service to the systematist.

tubercle); the space between the basal enlargement and the recurrent shaft not exceeding the width of the latter. The shaft is strongly sinuate above near the apex, the length of the sinus being about equal to the width of the eye-tubercle; the posterior end of the sinuated portion is provided at the lower (posterior) outer edge with a sharp tooth, beyond which the shaft is continued for a short distance to terminate in a sharp point; the tooth is situated over or slightly behind the eyes when the flagellum is depressed, and is never absent. The shaft is also cylindrical throughout and quite smooth, except on the anterior half of the sinuated portion, which is provided with an oblique and very minutely granular band, commencing anteriorly on the upper surface and ending behind on the outer side.

Upper jaw of mandibles in ♂.—Terminal fang short and weak, curving downwards and outwards at the apex but without sigmoid flexure; the fang flattened at the base above and slightly dilated on the inner side, the dilation often minutely and angularly prominent or almost toothlike anteriorly. First and second tooth large, straight, followed by 2 small teeth, the anterior of which may be very minute or even absent from one or both jaws, the last tooth of the single series large, quadrate, emarginate at apex. *Lower jaw* with 2 large curved teeth and a much smaller tooth between them just in front of the hind one.

Upper jaw in ♀ and young with 3 large strong teeth in the single series and a pair of small ones between the second and third, the anterior of these small teeth very minute, although apparently never absent. *Lower jaw* with 2 large teeth and a small one between them.

Colour.—Entirely pale yellow to reddish yellow, the skin of the abdomen generally darker greyish yellow or grey (often very dark in badly preserved spirit specimens). The long hairs and the bristles on the legs and head-plate, and especially those on the mandibles, reddish or reddish yellow; the hairs on the abdomen yellower and generally of a beautiful golden colour, sometimes with a reddish tinge. Terga not differently coloured from the sides of the abdomen. Malleoli pale. Head-plate infuscated just behind the pale anterior border.

Legs and palps with a thick under-coat of very short hairs, which are much more numerous than the longer ones.

Dimensions.—♂: Tibia of palp a little shorter than (18·7 : 19·1), equal to, or a little longer than (17·4 : 16·9) the metatarsus + tarsus and always exceeding the tibia of IV. leg (by $1\frac{1}{4}$ – $2\frac{1}{2}$ mm.). ♀: Width of head-plate equal to or considerably less than the tibia of

palp, and slightly less than, equal to, or slightly greater than the tibia of IV. leg. Tibia of palp shorter than its metatarsus + tarsus, but equal to or longer than the tibia of IV. leg.

Measurements of a large ♂ and ♀* (No. 2826, from Elizabethfontein, Clanw. Div.).—Total length ♂ 50, ♀ 60; length of head-plate ♂ $9\frac{1}{4}$, ♀ 9, width ♂ 11, ♀ 12; length of mandible ♂ $14\frac{1}{2}$, ♀ $17\frac{1}{4}$, width ♂ 5, ♀ $6\frac{1}{4}$; length of flagellum 14; length of palp ♂ 58, ♀ 45, tibia ♂ $18\frac{3}{4}$, ♀ 14, metatarsus + tarsus ♂ 19, ♀ 15; length of III. leg ♂ 50, ♀ 39; length of IV. leg ♂ 79, ♀ 61.

Localities.—The Museum possesses 6 ad. ♂, 7 ad. ♀, and 4 young from the western Divisions of the Colony, extending from the Orange River southwards as far as Malmesbury, Paarl, and Worcester, viz.:—

(a) Namaqualand Div.—1 ad. ♂ from Kraaiwater, near Naroep, Great Bushmanland (*M. Schlechter*), 1 ad. ♂ from Steinkopf (*W. H. Turle*), 1 ad. ♂ and 1 ad. ♀ from Ookiep (*Dr. Howard*); also 2 ad. ♀ from Namaqualand (*M. Schlechter* and *W. C. Scully*).

(b) Clanwilliam Div.—1 ad. ♂ and 1 ad. ♀ from Elizabethfontein (1,000 feet, *Miss M. Bergh*), 1 ad. ♀ from Wupperthal (*C. L. Leipoldt*), and 1 juv. from Clanwilliam village (*C. L. Leipoldt*).

(c) Malmesbury Div.—1 ♀ (dried) from the village of Malmesbury (*Dr. R. H. Rozenzweig*).

(d) Paarl Div.—1 ad. ♂ from the Paarl village (*Rev. J. F. Curlewis*).

(e) Worcester Div.—1 ad. ♂ from the village of Worcester (*J. Lycett*), 1 ad. ♀ and 1 juv. from Rabiesberg, near Nuy River (*F. Purcell*), and 2 juv. from Touws River (*Dr. W. P. Le Feuvre*).

Besides these there is an ad. ♂ and an ad. ♀ without locality (*Rev. G. H. R. Fisk*).

SOLPUGA VENATOR, Poc.

Pocock, Ann. Mag. N. H. (6), xx., p. 258, fig. 7, ♂.

Flagellum very variable in length, reaching to above the centre of the eyes in the northern variety but terminating a little distance

* Throughout this paper the total length includes the mandibles; the length of the legs is taken along the upper side from the apex of the tarsus to the base of the first free segment, that of the palps to the posterior upper edge of the first free segment; the length of the head-plate is measured along the median line from the anterior surface of the ocular tubercle, and that of the mandible is taken laterally from the apex to the hinge; that of the flagellum from the apex to the anterior bend.

before the eye-tubercle in more southern varieties.* Basal enlargement like that of *lethalis*, except that the upper edge is less sharply or not at all angular. Recurrent part cylindrical, except quite anteriorly at the bend, with a similar sinus at apex, but without trace of apical tooth; anterior surface of bend on a level with the apex of first tooth of jaw, or farther forward midway between this tooth and the apex of the jaw.

Dentition and terminal fang as in *lethalis*, except that there is only one small tooth between the second and third large ones in the upper jaw in both sexes (in a ♀ from Victoria W. one jaw has 3 such small teeth and the other only one, but this is doubtless an abnormality).

Colour as in *lethalis*.

Measurements of large ♂ and ♀ (from Naroep).—Total length ♂ 57, ♀ 75; length of head-plate ♂ 11, ♀ 11, width ♂ 12, ♀ $15\frac{1}{4}$; length of mandibles ♂ 16, ♀ 20, width ♂ $5\frac{3}{4}$, ♀ $7\frac{3}{8}$; length of flagellum 13; length of palp ♂ 68, ♀ 54, tibia ♂ $22\frac{1}{2}$, ♀ 16, metatarsus + tarsus ♂ $20\frac{1}{3}$, ♀ $17\frac{1}{2}$; length of III. leg ♂ 57, ♀ 46; length of IV. leg ♂ 82, ♀ 71, tibia ♂ $18\frac{1}{2}$, ♀ 15, metatarsus ♂ $16\frac{2}{3}$, ♀ $13\frac{1}{2}$.

Localities (in Cape Colony).—(a) Sutherland Div.: 1 ad. ♂ (dried) from the Little Roggeveld (*J. Lyckett*).

(b) Pr. Albert Div.: 1 ad. ♀ from Laingsburg (*D. Carr*).

(c) Beaufort W. Div.: 1 ad. ♂, dried (*L. Péringuey*).

(d) Middelburg Div.: 1 ad. ♀ from Middelburg (*Dr. C. S. Piers*).

(e) Victoria West Div.: 1 ad. ♀ from Wagenaars Kraal (*Dr. C. S. Piers*).

(f) Carnarvon Div.: 2 ad. ♂ and 4 juv. from Van Wyks Vlei (*E. G. and D. C. Alston*).

(g) Kenhart Div.: 2 ad. ♀ from Pofadder, in Great Bushmanland (*Max Schlechter*).

(h) Namaqualand Div.: 1 ad. ♂ and 2 ad. ♀ from Naroep and

* The apex of the flagellum, when depressed, may be distant from the ocular tubercle $1\frac{1}{3}$ times the width of the latter (♂ from Sutherland Div.), once this width (♂ from Beaufort W.), $\frac{3}{4}$, $\frac{2}{3}$, or $\frac{1}{2}$ — $\frac{1}{4}$ this width (a ♂ from Van Wyks Vlei); in another ♂ from Van Wyks Vlei one flagellum is $\frac{1}{4}$ this width from the tubercle, while the other reaches the eye itself; in one ♂ from Bushmanland the apex just touches the anterior side of the tubercle, while in the other it reaches to the centre of the eye. Different as two extreme cases may appear, it is nevertheless impossible to specifically separate these specimens, which do not otherwise differ except in slight and unimportant variations in the relative lengths of the segments of the limbs.

1 ad. ♂ from Kraaiwater, near Naroep, Great Bushmanland (*Max Schlechter*).

Also 2 ad. ♂ without locality (*Sir Bartle Frere, Rev. G. H. R. Fisk*), and 1 juv. labelled "Nisbet Bath" (Warmbad, in Great Namaqualand).

The distribution of this species is interesting. It evidently occupies the whole of those dry regions of the Colony (without winter rains) which lie to the east of the coast strip with winter rains occupied by *lethalis*. The only locality where both species have been found to occur is Great Bushmanland (without winter rains), where, however, *lethalis* appears to be very rare. In fact at Naroep the males of no less than three large yellow species have been found living side by side by Mr. M. Schlechter, viz., *lethalis*, *venator*, and *schlechteri*.

SOLPUGA SERRATICORNIS, n. sp.

(Figs. 16, 16a.)

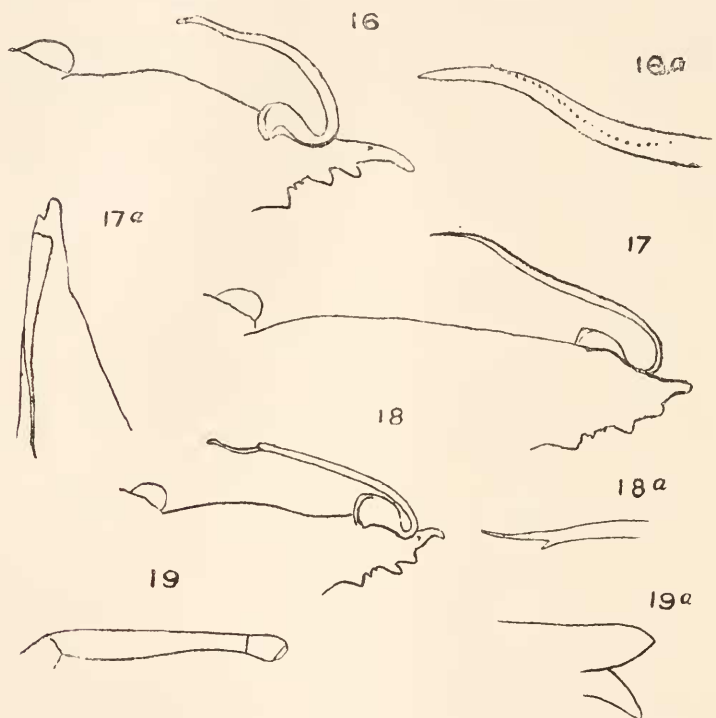
♂ (*Type*).—*Flagellum* reaching back a little beyond the middle of the mandible, ending far in front of the ocular tubercle. Basal enlargement high, the anterior upper edge less curved than the very convex posterior edge but not forming an angle with the latter. Procurrent portion of flagellum short. Recurrent portion forming a bold curve high above the basal enlargement, the curve occupying three-fourths of the length and having the concavity facing downwards; the distal fourth of the recurrent portion forms a smaller curve also opening downwards, and where the two curvatures join a sinus opening upwards is formed. The recurrent portion is stout anteriorly, terete, not flattened, tapering towards the apex, and provided with a minutely but sharply denticulate crest in the posterior third or fourth of its length. This crest runs along the middle of the outer surface anteriorly, but along the upper outer edge more posteriorly, ending a little distance from the apex, which is sharply pointed (fig. 16a).

Upper jaw of mandibles with 3 large teeth in the single row, the first two being straight, not hooked, while between the second and third are 2 small teeth (fig. 16). Terminal fang strong, long and curved downwards but not outwards, more convex than flattened above (except just under the bend of the flagellum), scarcely dilated on the inner side, but provided here with a minute tooth, which is, however, hardly large enough for the lower jaw to close against it.

Lower jaw with 2 large hooked teeth and a smaller tooth between these just anterior to the hinder one.

Dentition of ♀ as in *lethalis*, the upper jaw with 2 small teeth between the second and third large ones.

Colour.—Head-plate and mandibles reddish yellow, the head-plate infuscated just behind the pale anterior border; the legs also reddish yellow in the ♀, but pale yellow in the ♂. Under side of



Solpuga serraticornis, n. sp. ♂. Fig. 16, left mandible from inner side. Fig. 16a, apex of right flagellum from the lateral side more highly magnified.

S. schlechteri, n. sp. ♂. Fig. 17, right mandible from lateral side. Fig. 17a, distal part of same mandible from above.

S. venosa, n. sp. ♂. Fig. 18, left mandible from inner side. Fig. 18a, apex of left flagellum from above.

S. lethalis, Koch. Fig. 19, metatarsus and tarsus of palp from the side. Fig. 19a, rostrum (apical tuft of hairs not sketched in).

body pale yellow, greyish in one ♀ specimen. The tergal plates of the abdomen and the upper portion of the soft skin on each side of these plates black. The hairs and bristles on the legs, head-plate,

and especially on the mandibles reddish or reddish yellow, those on the back and sides of abdomen uniformly reddish yellow. Malleoli pale.

Locality.—One male (type, No. 1180) from Buluwayo (*Rev. Dr. F. Kolbe*). One ad. ♀ from Umgusi, near Buluwayo (*R. Pratt*), and another from Southern Rhodesia (*R. Pillans*).

Measurements of the Buluwayo Specimens.—Total length ♂ 40, ♀ (abdomen not distended) 58 (in Mr. Pillan's specimen 73, the abdomen being much distended); length of head-plate ♂ 8, ♀ 10, width ♂ 10, ♀ 15; length of mandible ♂ 12, ♀ 20, width ♂ $4\frac{1}{2}$, ♀ 7; length of flagellum $5\frac{3}{4}$; length of palp ♂ 41, ♀ 41, tibia ♂ 14, ♀ 13, metatarsus + tarsus ♂ $13\frac{1}{2}$, ♀ $13\frac{1}{2}$; length of III. leg ♂ 38, ♀ $35\frac{1}{2}$; length of IV. leg ♂ 56, ♀ 56, tibia ♂ 12, ♀ $11\frac{1}{2}$, metatarsus ♂ 11, ♀ 10.

SOLPUGA SCHLECHTERI, n. sp.

(Figs. 17, 17a.)

♂.—*Flagellum* moderately long, reaching back as far as the middle of the mandible. Basal enlargement high, its posterior margin very convex, its upper margin much straighter and strongly sloping forwards, forming a blunt angle with the posterior margin. Procurrent portion of flagellum short, the anterior bend high, situated just over the first tooth of the upper jaw. Recurrent portion sinuate above behind the middle and again below near the apex, the whole anterior portion (that lying above and before the basal enlargement) much flattened; the middle portion cylindrical; the distal third of the recurrent portion strongly compressed laterally in its basal half, but finely subulate in the apical half. This distal third is sinuated throughout its length below, while its upper edge is minutely serrated nearly to the apex, the serration commencing anteriorly along the outer side of the upper surface but crossing over to the inner side of this surface posteriorly. Seen from above (fig. 17a) the flagellum appears broadest anteriorly and becomes gradually narrower up to the commencement of the distal third, but seen from the side it appears thickest in the middle (fig. 17). The anterior portion lies some little distance above the basal enlargement.

Upper jaw with 3 large teeth in the single row; between the second and third large tooth are 2 small teeth, of which the anterior one is very minute; the 2 anterior large teeth confluent at their base and stumpy. Terminal fang very short, curved, its upper

surface flattened but not grooved, dilated on the inner side, the dilation ending anteriorly in a strong tooth against which the lower jaw closes. *Lower jaw* with 2 large strong teeth and a small tooth between them, just in front of the hind one; this hind tooth recurved at the apex, and provided in one of the jaws with a minute additional tooth on its anterior surface; the large anterior tooth straight, scarcely recurved at the apex.

Colour as in *lethalis*, entirely pale yellow, the long hairs and bristles on the legs, head-plate and mandibles, tinged with reddish, those on the abdomen pale yellow. Head-plate infusate just behind the pale anterior border. Malleoli pallid.

Measurements of ♂.—Total length 53; length of head-plate $9\frac{3}{4}$ and equal to the width; length of mandible 13, width 5; length of flagellum $7\frac{1}{2}$; length of palp 55, tibia 18, metatarsus + tarsus 17; length of III. leg 50; length of IV. leg 76, tibia 17, metatarsus 15.

Locality.—One adult ♂ (type, No. 3788) from Naroep, Great Bushmanland, Namaqualand Div., collected in March, 1898, by Mr. Max Schlechter, who has discovered no less than three new Solifugæ in Bushmanland.

SOLPUGA VENOSA, n. sp.

(Figs. 18, 18a.)

♂ (*Type*).—*Flagellum* reaching back beyond the middle of the mandible but terminating some distance in front of the eye-tubercle. Basal enlargement high, rounded, the upper edge forming a short sharp ridge in the posterior part. Procurrent portion of flagellum extremely short, the anterior bend situated above or very slightly anterior to the first tooth of the jaw and very close to the basal enlargement. Recurrent portion almost touching the basal enlargement, compressed from above and below; the anterior three-fourths nearly straight (except quite anteriorly), becoming slightly narrower posteriorly (when seen from above), where it is bifid, the median branch forming a short sharp tooth, while the lateral, which forms the distal fourth of the recurrent portion, is much longer, lightly sinuate above, with the apex laterally compressed and dilated above into a knife-like edge.

Upper jaw of mandibles with the first and second tooth strong, straight, followed by a pair of smaller teeth (the first of which is very minute), and another large one at the end of the single series. Terminal fang short and weak, curved downwards and slightly out-

wards at the apex, flattened at the base above and provided on the inner side with a minute tooth or weak tubercle. *Lower jaw* with 2 large teeth and a small tooth between them, just in front of the hinder one.

Colour.—Head-plate yellowish, the anterior portion reddish, infuscated just behind the pale anterior border; mandibles yellowish at the sides, reddish above; three posterior pairs of legs reddish, the basal joint or joints yellow below and behind, especially in the last pair; tarsi pale yellow; tibiæ and some of the femora with branched crimson veins on the outer surface. Tergal plates of abdomen deep black, the soft skin on each side of them crimson, the rest of the lateral surface and the under side pale. Hairs on the legs pale yellow or somewhat reddened, those on the mandibles and some on the head-plate reddish; hairs on the dorsal, lateral, and under surfaces of the abdomen uniformly golden yellow. Malleoli infusate at apex.

Locality.—1 ♂ (type, No. 3801), captured about twenty miles east of Pietersburg, Zoutpansberg Distr., Transvaal, by the Rev. J. W. Daneel.

Measurements.—Total length 33; length of head-plate $5\frac{1}{2}$, width $6\frac{1}{2}$; length of mandible $8\frac{1}{2}$, width 3, length of flagellum $5\frac{1}{4}$; palps wanting; length of III. leg 26; length of IV. leg 42, tibia $9\frac{1}{4}$, metatarsus 8.

SOLPUGA CUNEICORNIS, n. sp.

(Figs. 20, 20a.)

♂.—*Flagellum* short, reaching a little distance behind the basal enlargement, but not as far as the middle of the mandible. The basal enlargement high, triangular in outline, the posterior edge convex, the antero-superior edge quite straight, strongly inclined forwards and forming a sharp angle with the posterior edge above. This angle is caused by the upper edge being produced into a thin, high, vertical, lamellar keel. Shaft extremely broad at the anterior bend (which is a little behind the level of the first tooth of upper jaw), being here almost *twice* the width of the fang below it, the recurrent portion strongly flattened anteriorly and gradually narrowing towards the middle, where a slight twist round the axis occurs. Seen from above the anterior half of the recurrent portion thus appears foliaceous and cuneiform, and the distal half subulate; but from the side the anterior half appears filiform, while the distal half, although still subulate in appearance, is a little broader anteriorly

than when viewed from above. The distal half is also slightly bent outwards from the twist, while the foliaceous anterior half is furnished above with a number of longitudinal striæ and a wider paler line along the middle, like the leaf of a palm.

Upper jaw of mandibles with the terminal fang short and rather weak, moderately curved downwards and outwards but without sigmoid flexure, the upper surface rather flattened and slightly dilated internally, the dilation ending angularly or in a minute tooth anteriorly (Fig. 20a). First tooth of upper jaw small, second tooth large, third and fourth small, about as large as the first, fifth (last tooth of the single series) large. *Lower jaw* with 2 large curved teeth and a smaller tooth between, just in front of the hinder tooth.

Colour.—Ground colour a very pale yellow, but the upper surface and the legs much darkened with purplish black and in places marmorate. Head-plate finely marbled with purplish black, darker near the periphery, more yellowish in the centre, a fine, median, longitudinal line yellow; the eye-tubercle black. Mandible only slightly marbled, a lateral and a pair of dorsal stripes on the basal part dark purplish black. Tergal plates of abdomen irregularly tinged with purplish black on a yellow background, the lateral edges bordered by a fine black line. Palps from the distal half of the femur to the apex, also the distal part of the femur, the tibia and the proximal part of the metatarsus of the legs more or less purplish-black. Sides and under-surface of abdomen yellowish brown. Hairs reddish; those on the abdomen paler, reddish yellow. Malleoli pale.

First six or seven dorsal plates of abdomen nearly devoid of fine hairs, but provided with a comparatively small number of isolated, symmetrically disposed, reddish bristles of various sizes, some being very stout, especially six along the hind margin and two nearer the centre of each plate, these similar to the large ones on the eye-tubercle. Sides and under surface of abdomen thickly clothed with soft hairs. Ocular tubercle with a limited number of bristles, which are symmetrically disposed in a regular semicircle of 5-6 setæ round each eye; the anterior bristle stout, being the largest of the row, the posterior ones decreasing successively, the second of the row also long, the third moderate, situated on the summit of the tubercle, the rest small and on the posterior half of the tubercle; between the second and third seta is a fine hair, and there are further a small number of fine hairs (4-6) on the anterior part of the eye-tubercle. Palps with many short, stout spines below on metatarsus (and a few also on tibia and end of femur), in addition to the scopula and truncated bristles.

Locality.—One ♂ (type, No. 3799) from Southern Rhodesia (R. Pillans).

Measurements.—Total length 17; length of head-plate $3\frac{1}{2}$, width 4; length of mandible $4\frac{3}{4}$, width 2; length of flagellum 2; length of palp 18, tibia 6, metatarsus + tarsus $5\frac{1}{4}$; length of III. leg $17\frac{1}{4}$; length of IV. leg 27, tibia 6, metatarsus 5.

SOLFUGA CERVINA, n. sp.

(Figs. 21, 21a.)

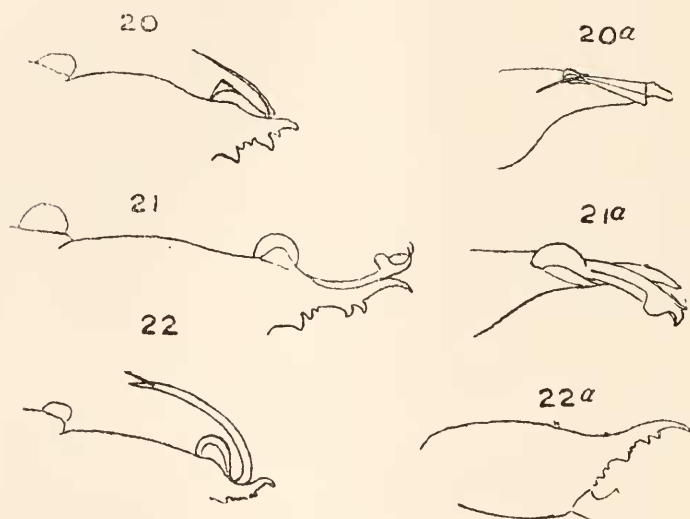
Flagellum.—Basal enlargement high, the upper and hinder borders continuously convex. Whole shaft procurvent,* not at all recurved, broad, strongly flattened from above, curving gently outwards and very slightly upwards, thickened towards the apex and terminating in a short, sharp, strongly curved spur, which is directed outwards and upwards. On the outer edge of the thickened part is a strong, obtuse, lobe-like process directed backwards and upwards; nearly opposite this lobe and slightly distal to it on the inner edge is a curved filiform process, exceeding the apical spur in length and minutely serrated along the outer edge; apex of flagellum situated over or a little anterior to the apex of upper jaw.

Upper jaw of mandibles in ♂ with the first two teeth strong, hooked, and rather remote from the apex of the jaw, followed after a short interval by two smaller teeth, of which the anterior is very minute; fifth or last tooth of the single series strong and hooked. Terminal fang long and slender, with distinct sigmoid flexure, strongly depressed at the base (which bears the two hooked teeth), then curving gently upwards, and then again downwards and strongly outwards at the apex; its surface rather convex above, the inner side not dilated, provided with a minute tooth. *Lower jaw* as usual (in one jaw the first tooth is not larger than the second), the upper surface not sulcate, nor keeled laterally alongside the teeth.

♀.—Between the second and third large tooth of the upper jaw of the mandibles are two small ones, the anterior of which is very minute. Lower jaw with one small tooth between the two large ones. First segment of the abdominal sterna not produced behind at the median angles.

* This species affords an excellent illustration of the alteration in position which the flagellum often undergoes in the process of drying. If a spirit specimen be exposed to the air for a short time, the flagellum curls up until its distal half is quite curved backwards. On relaxing a dry specimen the organ appears to return to its original position.

Colour of ♂ and ♀.—Very much as in *cuneicornis* but not so dark. Ground colour pallid or pale yellowish, but the greater part of the legs and of the upper surface of the body is of a dark purplish tint. Head-plate with the borders and a median line pallid, the central part on each side of the median line marmorate, the eye-tubercle deep black. Mandibles pallid or yellowish, finely marbled with purplish and provided with one lateral and two dorsal, darker, purplish stripes. Tergal plates of abdomen purplish brown; the sides of the abdomen yellowish. The short basal segments of the legs and the basal part of the femur of palps pallid or yellowish; the



Solpuga cuneicornis, n. sp. ♂. Fig. 20, right mandible from lateral side. Fig. 20a, distal part of same mandible from above.

S. cervina, n. sp. ♂. Fig. 21, right mandible from lateral side. Fig. 21a, apex of same mandible from above.

S. fusca, Koch. Fig. 22, right mandible of ♂ from lateral side. Fig. 22a, right mandible of ♀ from lateral side.

under side of the legs, their tibiae and metatarsi, and the apex of the palp more or less pallid or pale yellowish. Hairs on legs and abdomen reddish yellow, those on the head-plate and mandibles darker. Malleoli pallid.

Terga of abdomen with a moderate number of bristly hairs. The palp and IV. leg, or at least their tibiae, as in *cuneicornis* without the under coat of short hairs found in the previous species. Ocular tubercle with about eight distinct bristles and about as many finer hairs, somewhat irregularly arranged, on the anterior half (besides others on the posterior side).

Localities.—(a) One ♂ (type, No. 2845) from the village of Clanwilliam (C. L. Leipoldt, Nov., 1897), and 1 ♀ from the same locality (R. M. Lightfoot).

(b) One ♂ (dry) without a history.

(c) One ♀ from Van Wyks Vlei, Carnarvon Div. (E. G. and D. C. Alston), almost exactly resembling the ♀ from Clanwilliam; in one of the upper jaws the anterior of the two small teeth has all but vanished.

(d) One ♀ from Steinkopf, Namaqualand, and one from Namies, Bushmanland (M. Schlechter), both differing from the typical ♀ in having only one small tooth between the second and third large tooth of the upper jaw. As the anterior of these small teeth is very minute in the typical ♀, I do not consider its absence of specific value, although of course the male must be found in these localities too before the specific identity of these three specimens can be considered certain.

Measurements of typical ♂ and ♀.—Total length ♂ $22\frac{1}{2}$, ♀ 30; length of head-plate ♂ 4, ♀ $3\frac{1}{2}$, width ♂ $4\frac{3}{8}$, ♀ $4\frac{3}{4}$; length of mandibles ♂ $6\frac{1}{2}$, ♀ 8, width ♂ $2\frac{1}{8}$, ♀ $2\frac{1}{2}$; length of palps ♂ $26\frac{1}{2}$, ♀ $23\frac{1}{2}$, tibia ♂ 8, ♀ $7\frac{1}{4}$, metatarsus + tarsus ♂ $8\frac{1}{2}$, ♀ $7\frac{3}{8}$; length of III. leg ♂ 25, ♀ $21\frac{1}{2}$; length of IV. leg ♂ $36\frac{1}{2}$, ♀ 31, tibia ♂ $7\frac{3}{4}$, ♀ $6\frac{1}{2}$, metatarsus ♂ 7, ♀ 6.

SOLPUGA FUSCA, C. L. Koch.*

(Figs. 22, 22a.)

C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 352, 1842; Die Arachniden, xv., p. 76, fig. 1470, ♂, 1848.

Flagellum.—Basal enlargement high, rotundate in outline. Anterior bend of flagellum situated behind the level of the first tooth of the jaw and nearly over the second tooth. Recurrent portion rod-like and comparatively thick, being as thick as or thicker than the terminal fang of jaw and extending back some distance behind the middle of the mandible, but not reaching the head-plate. In one specimen the shaft is distinctly compressed, the flattened side being turned upwards and outwards, so that the inner edge lies higher than the outer; in the other specimen the flagellum is scarcely compressed and almost cylindrical. The sides of the shaft are parallel, but at

* These specimens, which I had described as new, were kindly identified from Koch's type by Professor K. Kraepelin.

the apex the flagellum terminates in a short, sharp, subulate portion, at the base of which a fine, straight, pallid, bristle-like process springs from the upper edge and extends backwards beyond the apex.

Upper jaw of mandibles in ♂ (fig. 22) much resembling that of *cervina*, the first two teeth large, almost straight, followed by two small teeth and a large one; the terminal fang rather long and slender, with strong sigmoid flexure, strongly depressed at the base, curving first upwards and then at the apex strongly and suddenly downwards. *Lower jaw* with two strong curved teeth and *two or three* small ones between them just in front of the hind tooth; the upper surface not sulcate laterally alongside of the teeth.

Female with 2 small teeth in the upper jaw, between the second and third large tooth, and 2-3 *small ones* in the lower jaw between the two large ones (Fig. 22a); in one specimen there is also a small tooth between the first and second large tooth in the upper jaw.

Colour.—Upper surface of the mandibles, the whole of the head-plate (except the white anterior margin), the tergal plates of the abdomen, and the legs ferruginous-black; the sides and under surface of the mandibles, the under surface of the thoracic segments and of the basal joints of the legs pale yellowish; under side of palp and of the three posterior femora paler than the upper side. Ventral plates of abdomen pale, with blackened lateral borders in the ♀, but more or less darkened in the ♂. The soft skin on the sides of the abdomen pale in the ♀, with blackened upper and lower borders and thinly clothed with pallid hairs; in the ♂ this soft skin is quite hidden by a thick coat of silvery white appressed hairs.* Malleoli blackened distally. Hairs on the mandibles, head-plate, and legs dark brown, a few yellowish brown, those on the posterior terga very dark, contrasting strongly with the pale or white hairs on the sides of the abdomen.

First abdominal sternite not produced behind at the median angles in the ♀.

Measurements.—Total length ♂ 16, ♀ 16; length of head-plate ♂ $2\frac{1}{4}$, ♀ $2\frac{1}{5}$, width ♂ $2\frac{2}{3}$, ♀ $2\frac{1}{2}$; length of mandible ♂ $3\frac{1}{2}$, ♀ 4; length of flagellum $2\frac{1}{5}$; length of palp ♂ 12, ♀ 9, tibia ♂ $3\frac{1}{4}$, ♀ $2\frac{3}{4}$, metatarsus+tarsus ♂ 4, ♀ $8\frac{1}{2}$; length of III. leg ♂ $11\frac{1}{2}$, ♀ 9; length of IV. leg ♀ 15, tibia ♂ $3\frac{1}{4}$, ♀ 3, metatarsus ♂ $3\frac{3}{4}$, ♀ 3.

Locality.—2 ad. ♂ from near Cape Point (*R. M. Lightfoot*), 1 ♀

* Koch describes the sides of the upper surface of the abdomen as ochre-yellow in the ♂.

from side of Table Mountain, near Rondebosch (*F. Treleaven*), 1 ♀ from Wynberg (*F. Purcell*); also two dried females; all these specimens from the Cape Peninsula.

II.—The *VINCTA* Group.

Dentition of the upper jaw very dissimilar in the two sexes; the teeth of the distal or single series not exceeding five in number and separated into groups by one or two long untoothed intervals in the adult male (the distal group often obsolete) (figs. 23–27); teeth in the ♀ as in Group. I.

In the first abdominal sternite the posterior median angles of the halves are more or less produced into a rounded lobe in the adult ♀. Metatarsus of palps as in Group I. In the ♂ the upper margin of the basal enlargement of the flagellum is strongly elevated, forming a high, thin, upright keel along its whole length, and the terminal fang of the upper jaw has the inner edge of the upper surface distinctly elevated keel-like to form a groove for the reception of the procurent portion of the flagellum. When the bend of the flagellum is remote from the apex of the fang, the distal part of this keel lies free and is very distinct; if, however, the flagellum almost reaches the apex it fills up almost the entire groove, leaving only the anterior angular extremity of the keel free. (In *lateralis*, Koch, this keel is obsolete.) Palps exceeding or equalling the III. leg in length. Posterior legs with the hairs either as in Group I., or arranged in a mane, or the long ones very numerous.

All the species of which the habits are known to me are diurnal (*lateralis*, *vineta*, *spectralis*, and others).

The females of this group may generally be recognised from those of Group I. by the colouration of the abdomen (the hairs on the sides being white or yellow, and nearly always strongly contrasting with the dark hairs on the posterior dorsal plates), and often also by the presence of a mane of long or short hairs on the hind legs. The adult ♀ is further easily recognisable by the produced hind angles of the first abdominal segment—a character not met with in immature specimens nor in any species not included in this group, as far as at present known.

The species which belong here are: *vineta*, Koch, *villosa*, n. sp., *spectralis*, n. sp., *lateralis*, Koch, *cultrata*, n. sp.; also the following, which are unknown to me: *marshalli*, Poc., *derbiana*, Poc., *producta*, Karsch, &c.

SOLPUGA VINCTA, C. L. Koch.

(Fig. 23).

C. L. Koch, Arch. f. Naturg. viii., Bd. i., p. 352, 1842; Die Arachn. xv., p. 74, fig. 1468, ♂, 1848. Non Simon, Ann. S. Ent. Fr. (5) ix., p. 110, pl. 3, fig. 6, 1879.

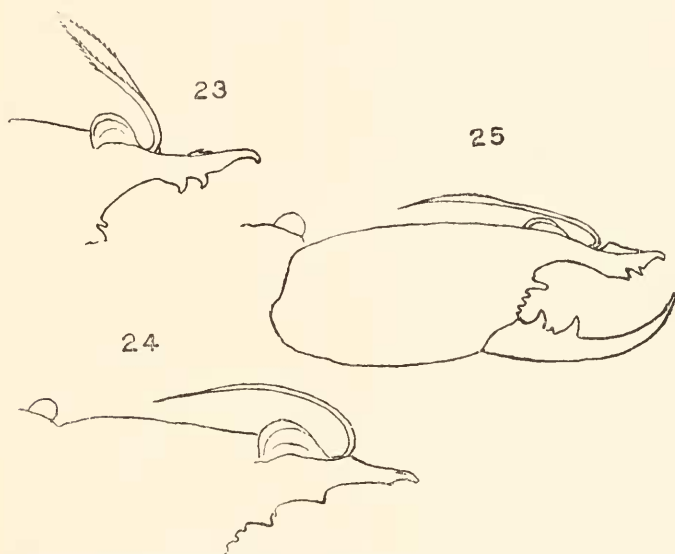
Flagellum.—Basal enlargement high, rounded, the upper edge produced upwards into a high, sharp, vertical keel along its whole length. Procurrent portion very short, the anterior bend remote from the apex of fang and situated behind the level of the second tooth. Recurrent portion straight and rather erect, inclined at an angle of 60° or more to the horizontal * and very short, being about equal in length to the terminal toothless portion of the lower jaw; in form spindle-shaped when seen from the front, increasing in width from the bend to the middle and tapering thence to a fine point; the transverse section through the middle T-shaped, the long bar of the T representing the section of the main blade, which is strongly flattened from before and behind (or above and below), while the short bar represents that of the median side; the anterior (upper) side, therefore, widely sulcate and facing slightly inwards; the three free edges of the distal half of the recurrent portion deeply and finely serrato-lacerated. *Upper jaw of mandibles* in ♂ with the first two teeth large and strongly hooked at apex, followed by a long, concave, toothless interval, after which a small tooth confluent with a large one follows, terminating the single series. Terminal fang moderate, inclining slightly downwards for about one-third of its length from the base, then slightly upturned, the apex suddenly and strongly curved downwards but not outwards; the upper surface sulcate at base, its inner edge flanked by a thin, upright, blade-like keel, which is situated above the first tooth; this keel finely serrated in its anterior half, provided with a sharp tooth directed forwards in the middle, but entire and higher in the posterior half. No tooth on the inner side of the fang. *Lower jaw* with two large curved teeth and a smaller one between them, nearer the hind tooth; upper surface not sulcate, its outer edge rounded off in the toothed region.

♀ and juv.—With one small tooth between the second and third large tooth in the upper jaw, and between the two large ones in the lower jaw.

Colour.—Head-plate and upper surface of mandibles yellowish brown in the male but generally much darker and ferruginous in

* In spirit specimens; but much more nearly horizontal when the specimen is allowed to dry.

the ♀ and young specimens. Sides of the mandibles and the under surface of the body brownish yellow; limbs ferruginous-brown, mostly darker in the ♀ than in the ♂, in both almost black distally. Legs with dark brown and whitish hairs intermixed. Hairs on head-plate and mandibles dark brown. Dorsal plates of abdomen ferruginous brown in the middle and blackened laterally, the posterior plates wholly ferruginous-black, especially in the ♂, the hairs on the plates dark brown, those on the posterior plates almost black. Sides of the abdomen ferruginous-black in the male, thickly covered with silvery white, somewhat iridescent hairs; the sides yellowish



Solpuga vineta, Koch. Fig. 23, apex of left mandible of ♂ from inner side.

S. villosa, n. sp. Fig. 24, left mandible of ♂ from inner side.

S. spectralis, n. sp. Fig. 25, right mandible of ♂ from lateral side.

brown in the adult ♀ and covered, although somewhat less thickly, with yellowish white hairs, those on the upper part bordering the tergal plates bright yellow and brownish yellow, iridescent. Abdominal sterna brown or yellowish brown, infuscated at the lateral borders. Legs without trace of a mane. Malleoli with infuscated edges.

Measurements.—Total length ♂ 23, ♀ 31; length of head-plate ♂ $3\frac{2}{3}$, ♀ $4\frac{1}{5}$, width ♂ 4, ♀ $4\frac{2}{3}$; length of mandibles ♂ 6, ♀ 8, width ♂ $2\frac{1}{4}$, ♀ $2\frac{3}{4}$; length of flagellum 2; length of palp ♂ $16\frac{1}{2}$, ♀ 17,

tibia ♂ 5, ♀ 5, metatarsus + tarsus ♂ $5\frac{1}{4}$, ♀ 6; length of III. leg ♂ 15, ♀ 16; length of IV. leg ♂ 25, ♀ 26, tibia ♂ $5\frac{1}{3}$, ♀ $5\frac{1}{3}$, metatarsus ♂ $4\frac{3}{4}$, ♀ $4\frac{3}{4}$.

Locality.—2 ad. ♂, several ad. ♀ and a number of young from round about Cape Town (Signal Hill, Devils Peak, *L. Péringuey*, *R. M. Lightfoot*, *F. Purcell*).

This species is diurnal in habits. The posterior median angles of the halves of the first abdominal sternite are produced in the adult female, but not produced in the male and immature specimens.

SOLPUGA VILLOSA, n. sp.

(Fig. 24.)

Flagellum reaching back beyond the middle of the mandibles and passing high above the basal enlargement. Basal enlargement distinctly longer than high, being produced anteriorly; its upper and posterior margins continuously rounded; upper margin strongly elevated along its whole length to form a well-developed keel, which, however, is much less in height than the exposed, outer, turgid portion. Procurent portion rather short, the anterior bend bold and high, remote from the apex of fang, situated about midway between this apex and the hind edge of the basal enlargement. Recurrent portion cylindrical, tapering distally to a fine bristle-like point, the third quarter of its length alate along the outer side, being furnished with a thin fin-like keel, which nearly equals the diameter of the shaft in height.

Upper jaw of mandibles in ♂ with peculiar dentition; the first tooth very small and near the apex, the second large and isolated, being far removed from both the first and the third, which is small and closely followed by the large last tooth of the single series. Terminal fang long and strong, very straight, its upper side parallel to that of the mandible, but on a slightly lower level; there is no flexure in the vertical plane, but the distal part is slightly bent outwards and the apex slightly downwards; upper surface of fang sulcate throughout, the median keel high beneath the anterior bend of flagellum, but low anteriorly to this and scarcely toothed. *Under jaw* with two strong teeth and a small one between them, just in front of the hind tooth, the upper surface distinctly *grooved* along the outer side of the row of teeth, the outer upper margin being strongly prominent and crest-like.

♀ and young.—One small tooth between the second and third

large tooth in upper jaw, and between the two large teeth in lower jaw.

Colour.—♂ brownish yellow to yellowish or orange-brown. Malleoli not black-edged. Bristles on the head-plate and mandibles dark brown, the dense short hairs on these parts and on the legs pale yellowish; the long hairs on the hind legs yellowish white or almost white, yellowish at the base, those on the under side of this leg, excepting on the tarsus, very numerous, forming a long, well-developed mane, the single hairs of which equal half the metatarsus in length; those on the upper side of the hind leg rubbed off in the type. Abdomen with the sides of the anterior and the whole surface of the posterior tergal plates thickly covered with intensely black hairs, the anterior plates with short yellowish hairs in the middle. Sides of the abdomen thickly clothed with longer, very pale, whitish-yellow hairs.

♀.—The short pubescence, especially that on the legs, very dense and soft and of a bright yellow colour, that along the upper and under sides of the last pair of legs longer, forming a very dense, short, bright yellow mane, extending along almost the whole length of the leg. The length of the single hairs of this mane is much less than in the case of the ♂, being only one-third of the length of the metatarsus. Sides of the abdomen densely covered with very gaudy yellow or partly orange-coloured hairs.

First segment of the abdominal sterna with the posterior median angles produced in the ad. ♀.

Measurements of typical ♂ and ♀.—Total length (bodies shrivelled) ♂ 28, ♀ 43; length of head-plate ♂ 6, ♀ 7, width ♂ 7, ♀ 10; length of mandibles ♂ 10, ♀ 13, width ♂ $3\frac{1}{2}$, ♀ $4\frac{3}{4}$; length of flagellum $6\frac{1}{2}$; length of palp ♂ $28\frac{1}{2}$, ♀ $26\frac{1}{2}$, tibia ♂ $9\frac{1}{4}$, ♀ $8\frac{1}{4}$, metatarsus + tarsus ♂ $9\frac{1}{4}$, ♀ $9\frac{1}{2}$; length of III. leg ♀ $25\frac{1}{2}$; length of IV. leg ♂ 47, ♀ 44, tibia ♂ 10, ♀ 9, metatarsus ♂ 10, ♀ 9.

Localities.—(a) *Types*: An ad. ♂ and ♀, dried (No. 1048), labelled "S. Africa, 1875" (*E. Hughes*).

(b) One dry specimen, apparently nearly mature, from Concordia, Namaqualand Div., 1893.

(c) One dry specimen, similar to the last, from Fraserberg (*H. Findlay*, 1888). All these specimens appear to belong to one species, which is remarkable for the denseness of the short yellow pubescence on the palps.

SOLPUGA SPECTRALIS, n. sp.

(Fig. 25.)

♂.—*Flagellum* reaching back beyond the middle of the mandible, passing close above the basal enlargement,* the latter shaped as in *S. villosa*; the anterior bend short and sharp, remote from the apex of the fang and situated some distance behind the distal group of teeth. Recurrent portion tapering distally to a filiform apex; the distal half much flattened from the sides, finely and deeply serrated along its upper edge, the lower edge thin but entire.

Upper jaw of mandibles with three distal teeth close together, of which the first is very small, triangular and keel-like, the second long and pointed, the third large and bifid at the apex; then follows a long, strongly concave, toothless interval, and finally a very long tooth immediately preceded by a very minute denticle; the posterior double series runs almost at right angles to the distal series. Terminal fang long, inclining slightly downwards from the base for about half its length, then sub-horizontal and curved outwards till near the apex, which is bent downwards; the upper surface provided along the inner edge throughout more than half the length of the free part before the flagellum with a very high keel, situated over the distal group of teeth, the upper edge of the keel slightly irregular but not toothed; at the commencement of the bend the flagellum is situated in the middle of the upper surface of the fang, and occupies almost the entire width. *Lower jaw* with two strong teeth and a small one just midway between them, the upper surface not grooved or keeled laterally in the toothed region.

Colour.—Legs and the upper surface of the body ferruginous, the mandibles paler, yellowish brown above, under surface of mandibles, of body, and of the basal joints of the legs pale yellowish. Legs and palps distally darker and ferruginous-black. The thorax, abdomen, and the three hind pairs of legs very densely covered with long soft hairs, those on the thorax and the anterior abdominal terga whitish brown in colour, the rest white; those on the hind leg enormously long and very numerous, but not forming a mane, the single hairs much longer than the metatarsus; on the posterior end of the abdomen above are a few black hairs. The bristles on the head-plate and mandibles brown, as are also most of the hairs on the palps. Malleoli black-edged.

Measurements.—Total length 28; length of head-plate 5, width 6;

* As the specimen is dried, the flagellum may have been more erect in the living animal.

length of mandible $8\frac{3}{4}$, width 3; length of flagellum $4\frac{2}{3}$; length of tibia of palp 8, tarsus + metatarsus 9; length of IV. leg 44, tibia $8\frac{1}{2}$, metatarsus $8\frac{1}{4}$.

Locality.—One ♂, dried (No. 1158), from Klipfontein, near Steinkopf, Namaqualand Div. (*L. Péringuey*, 1885).

SOLFUGA LATERALIS, C. L. Koch.

(Figs. 26–26b.)

C. L. Koch, Arch. f. Naturg. viii., Bd. i., p. 353, 1842; Die Arachn., xv., p. 82, fig. 1474, ♂. 1848.

Flagellum.—Basal enlargement very high, rotundate, the whole upper margin elevated in the form of a very high and thin laminar keel. Procurent portion very long, longer than the lamina, the anterior bend near the apex of the jaw and farther forward than the first large tooth. Recurrent portion very long and slender, gradually tapering towards the apex, cylindrical and almost straight, reaching back beyond the eyes and passing high above the basal enlargement; the apex not needle-pointed but somewhat blunted by a very minute dilation of the upper edge (fig. 26b).

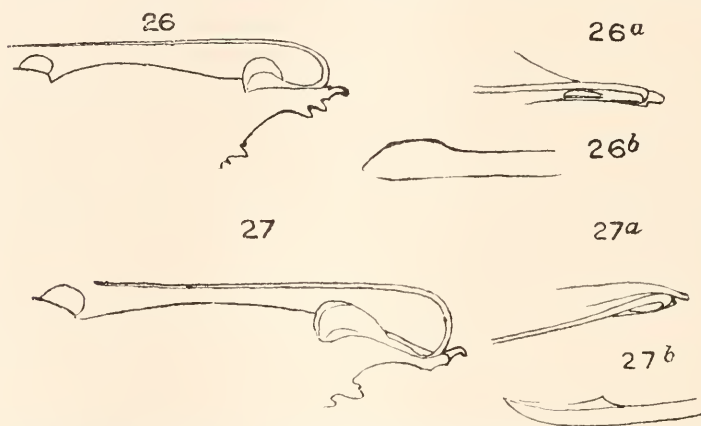
Upper jaw of mandibles in ♂ with three teeth near the apex, followed by a long, slightly concave or nearly straight, toothless interval; the first tooth very small and weak, the second and third straight and strong; first tooth of the basal series small, the second strong and straight and as large as the distal pair. Terminal fang curved downwards at the tip, the upper surface flattened and dilated inwards under the bend of flagellum, the dilated part ending anteriorly in a minute tooth but scarcely elevated along the inner edge, the inner keel of the upper surface being practically obsolete; the procurent portion of the flagellum occupies almost the entire width of the fang in the region of the anterior bend. Upper side of the fang on a level with that of the rest of the jaw and therefore not at all depressed, its under side with a convexity at the base, which bears the two large teeth. *Lower jaw* with a pair of large teeth and a small tooth between them, just in front of the hind tooth; the upper surface not sulcate laterally, its outer edge rounded off in the toothed region.

♀ and young with only one small tooth between the second and third large tooth in the upper jaw and between the two large teeth in the lower jaw.

Colour.—Head-plate and upper surface of mandibles brownish

yellow to brown, the sides and under surface of the latter and the under surface of the body yellowish; legs ferruginous-black, paler at the base, especially on the under side; head-plate infuscated behind the anterior border. Palps yellowish in the proximal part, becoming darker ferruginous distally, nearly black at the apex. Terga and sides of abdomen entirely black-ferruginous, the latter densely covered with silky yellowish white hairs; under side darker posteriorly. Malleoli infuscated at the edges. Hairs on the abdominal terga dark brown, those on the legs brown, many of those on the posterior pairs, especially in the ♂, whitish brown.

Posterior median angles of the halves of the first abdominal



Solpuga lateralis, Koch. ♂. Fig. 26, left mandible from inner side. Fig. 26a, apex of same mandible from above. Fig. 26b, apex of flagellum from the side, more highly magnified.

S. cultrata, n. sp. ♂. Fig. 27, left mandible from inner side. Fig. 27a, apex of same mandible from above. Fig. 27b, apex of flagellum from the side, more highly magnified.

sternite produced in the adult ♀ but not produced in the immature and ♂ specimens.

Measurements.—Total length ♂ 18, ♀ 24; length of head-plate ♂ 3, ♀ $3\frac{1}{3}$, width ♂ $3\frac{2}{3}$, ♀ 5; length of mandibles ♂ $5\frac{1}{4}$, ♀ 7, width ♂ 1.8, ♀ $2\frac{2}{3}$; length of flagellum 5; length of palp ♂ $12\frac{2}{3}$, ♀ $14\frac{1}{4}$, tibia ♂ 3.8, ♀ 4, metatarsus + tarsus ♂ $4\frac{1}{4}$, ♀ $4\frac{1}{2}$; length of III. leg ♂ $12\frac{2}{3}$, ♀ $13\frac{2}{3}$; length of IV. leg ♂ 19, ♀ 22, tibia ♂ 4, ♀ $4\frac{1}{2}$, metatarsus ♂ $3\frac{2}{3}$, ♀ 4.

Locality.—1 ad. ♂, 1 ad. ♀, and 1 juv. from Port Elizabeth (*J. L. Drège*, 1898); I have also examined an ad. ♂, kindly lent by Mr. West, of Port Elizabeth.

Mr. Drège informs me that this species is diurnal.

SOLPUGA CULTRATA, n. sp.

(Figs. 27-27b.)

Flagellum passing back a little distance above the basal enlargement and reaching or almost reaching the eye-tubercle. Basal enlargement shaped as in *villosa*. Procurrent portion long, the anterior bend very high and bold, situated close behind the apex of the fang. Recurrent portion slender and needle-like, the upper side minutely cultrate at the apex, being furnished here with a short, sharp, dark brown keel, which terminates anteriorly in a sharp angle (fig. 27b).

Upper jaw of mandibles practically toothless distally, strongly convex on the under side below the bend of flagellum and provided here with a couple of obsolete tubercles, representing the distal teeth; the convexity followed by a long, concave, untoothed portion, terminated behind by a long and strong tooth, which bears a small denticle on its anterior surface. Terminal fang inclined downwards from the base and depressed in the middle above, the weak apical part tilted upwards, but the actual tip is curved downwards and inwards; sigmoid flexure distinct. The inner half of the broad upper surface of the fang deeply grooved longitudinally for the reception of the flagellum, the short, free, anterior portion of the groove situated on the median side of the apical fang and terminating low down on a level with the under surface of the latter; the apex of the groove is emarginated and very wide, so that the lower jaw can close against it. The lateral half of the fang raised high above the level of the procurrent portion of the flagellum on its outer side, equalling the latter in width at the bend and continued forwards beyond this point, passing over directly into the tip of the fang (fig. 27a). *Lower jaw* with two large teeth and a small tooth between them, just in front of the hind one; the jaw *deeply grooved* above on the outer side of the teeth, the outer upper edge forming a strong dark brown keel, which is highest anteriorly and terminates rather abruptly considerably in front of the first tooth.

Colour.—Dorsal and upper half of the lateral surface of mandibles, the head-plate, the dorsal and lateral surfaces of abdomen, and the limbs infuscated; the under surface of the mandibles, of the body, and of the bases of the legs pale yellowish. Hairs on the limbs white, the last pair of legs without mane; * the bristles on the mandibles and head-plate infuscate, or yellowish at base and infuscated distally; femora of legs, the head-plate, and the sides of the mandibles thickly covered with minute white hairs. Tergal plates of abdomen some-

* As these legs are somewhat rubbed, this point is not quite certain.

what rubbed, but the hairs on the posterior segments are dark blackish brown; sides of the abdomen thickly covered with yellowish white hairs. Malleoli pale, not black-edged.

Dentition in young.—One small tooth between the second and third large ones in the upper jaw and between the two large teeth in the lower jaw.

Measurements of ♂.—Total length 40; length of head-plate 5, width 7; length of mandibles 9, width $3\frac{1}{4}$; length of flagellum $8\frac{1}{4}$; palp *very stout*, its length 23, tibia $7\frac{1}{5}$, metatarsus + tarsus $7\frac{1}{5}$, width of tibia $1\frac{5}{6}$; length of III. leg 21; IV. leg incomplete, tibia $6\frac{1}{2}$, metatarsus 6.

Locality.—One ♂, dried (type, No. 1051), from Durban, Natal (*J. Innes*, 1885); 1 juv. from the same locality (*Col. J. H. Bowker*).

This species is allied to *S. hostilis*, White, in which, however, the anterior curve of the flagellum is sharp and short, and the anterior third or half of the recurrent portion is not horizontal but inclined, with the under side concave. In *cultrata* the anterior curve is much higher, so that the anterior half of the recurrent portion is not concave below but lies in the same horizontal plane with the posterior half.

III.—The LINEATA Group.

Dentition of the upper jaw similar in the two sexes, the distal or single series composed of a small or moderately large distal tooth, followed by 1–3 small teeth and one large one, then 3–5 small teeth, and finally another large one (figs. 28, 29).

Palps considerably shorter than the III. leg; the pointed and truncated hairs of the metatarsus mostly replaced by hairs of various lengths, which are minutely bifid at the apex. In the ♂ the metatarsus of the palps is not scopulate below. Hairs on posterior legs mane-like, at least on the under side.

Only two species are comprised in this group, viz., *lineata*, Koch, and *brevipalpus*, n. sp.

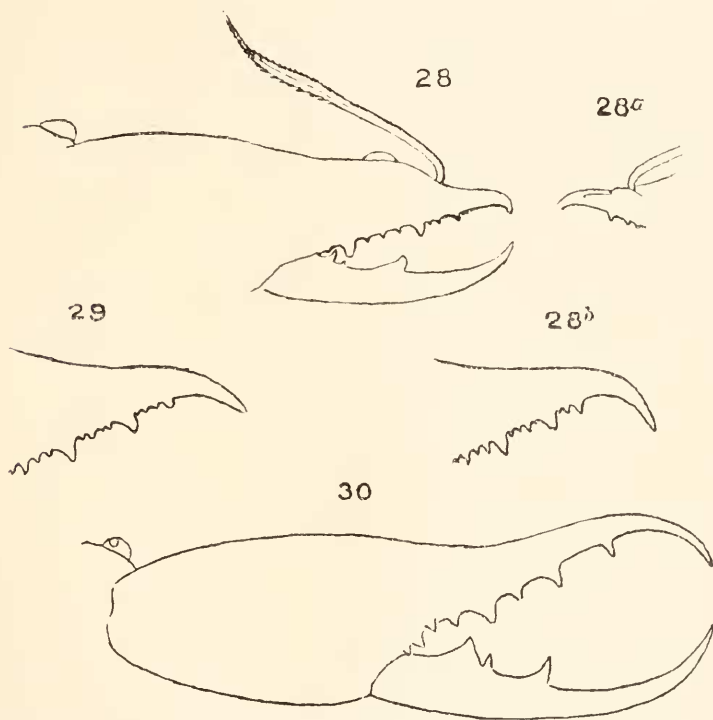
SOLPUGA LINEATA, C. L. Koch.

(Figs. 28–28b.)

C. L. Koch, Arch. f. Naturg., viii., Bd. i., p. 353, 1842; Die Arachn., xv., p. 80, fig. 1473, ♂, 1848.

♂.—*Flagellum* reaching back a little behind the middle of the mandibles. Basal enlargement small, rotundate, the free upper

portion strongly compressed, not turgid below on the outer side. Procurent portion much longer than the basal enlargement, the anterior bend rather remote from the apex of the jaw and about on a level with the second tooth. Recurrent portion passing a little distance above the basal enlargement, stout anteriorly, but flattened and thin posteriorly for more than half its length; from the bend it slightly increases in width up to the commencement of the distal



Solpuga lineata, Koch. Fig. 28, right mandible of ♂ from outer side. Fig. 28a, apex of same mandible from inner side. Fig. 28b, apex of mandible of nearly mature or ♀ specimen.

S. brevipalpus, n. sp. Fig. 29, apex of mandible of ♀.

S. nigro-braccata, n. sp. Fig. 30, right mandible of ♀ from lateral side.

third, whence it tapers to a long fine point; the flattened portion feathered along the edges and slightly twisted, so that the upper surface comes to face inwards distally; the shaft straight, but curving upwards distally.

Upper jaw of mandibles with the first tooth small or moderately

large, the second and third small, the fourth strong and curved, closing down just in front of the first tooth of the lower jaw ; then follows a series of 3-5 small teeth and finally another strong tooth, which terminates the single series ; the first tooth of the single series is always larger than the other small teeth, but smaller than the two large teeth. Terminal fang strong, curved downwards and outwards at the apex, the upper surface sulcate, being furnished on the inner edge with an upright smooth keel, which becomes very low anteriorly and terminates in a tiny angle or tooth at the commencement of the apical curve (fig. 28a). The under side of the upper jaw is perfectly straight, and there is no flexure except at the tip. *Lower jaw* with two large teeth and a small one between them just in front of the hind tooth but remote from the anterior one ; the upper surface of jaw not sulcate laterally, its outer edge somewhat angular but not carinate on the lateral side of the teeth.

Colour.—Yellow, two longitudinal stripes on the thorax and abdomen, four on the head-plate, and two on each of the mandibles infuscate or black ; the upper surface of all of the limbs blackened or dark brown, or the anterior limbs not infuscate. Pubescence of a beautiful silvery white colour, the long hairs on the head-plate and mandibles and many of those on the palps brown. Hairs on the sides of the abdomen long and silvery white. Hind legs with the tibia and metatarsus thickly covered above with enormously long silvery hairs, far exceeding the metatarsus in length, the hairs on the lower side of these joints and on the femora shorter, forming a delicate mane.

Dentition in young.—Upper jaw with the first tooth large, followed by one or two small ones, then another large one, followed by 4 small ones, after which comes the large last tooth of the single series. Lower jaw with one small tooth between the two large ones, which are closer together than in the ad. ♂.

Measurements of ad. ♂ and immature specimen from Ookiep.—Total length ♂ 32, juv. 25 ; length of head-plate ♂ 5, juv. $3\frac{3}{4}$, width ♂ $6\frac{1}{4}$, juv. $4\frac{3}{4}$; length of mandible ♂ 11, juv. $7\frac{1}{2}$, width ♂ $3\frac{1}{3}$, juv. $2\frac{1}{3}$; length of flagellum $4\frac{2}{3}$; length of palp ♂ $16\frac{1}{3}$, juv. $11\frac{3}{4}$, tibia ♂ $5\frac{1}{3}$, juv. $3\frac{1}{4}$, metatarsus + tarsus ♂ $6\frac{2}{3}$, juv. $4\frac{2}{3}$; length of III. leg ♂ 20, juv. $14\frac{1}{3}$; length of IV. leg ♂ $33\frac{1}{2}$, juv. $21\frac{1}{2}$, tibia ♂ 6, juv. 4, metatarsus ♂ $6\frac{1}{3}$, juv. $4\frac{1}{3}$.

Localities.—(a) 4 ad. ♂ and 1 juv. (all dried) from Ookiep, Namaqualand Div. (*L. Péringuey*, 1885). In these specimens the palps have no black stripes and the two infuscate stripes on the mandibles do not unite anteriorly.

(b) 1 ad. ♂ (dried) from Van Wyks Vlei, Carnarvon Div. (*E. G. Alston*, 1885). Palps and I. leg with a black longitudinal stripe; the two black stripes on the mandibles unite anteriorly.

(c) 1 ad. ♂ (in spirits) resembling the previous specimen, but without a history.

SOLPUGA BREVIPALPUS, n. sp.

(Fig. 29.)

♀.—*Upper jaw of mandibles* with the first tooth rather small, followed by 2–3 very small teeth and a large one; between the latter and the large last tooth of the single series are 3–5 very small teeth. *Lower jaw* with two large teeth and a small one between them, just in front of the hind tooth; the apex of the anterior tooth remote from the others, but its basal portion extends backwards to the small tooth in the form of a low keel.

Colour.—Pale yellow, the apex of the jaws and the eyes blackened. All the terga or only the posterior ones broadly ferruginous-brown at the lateral borders, the last segment entirely ferruginous-brown. Metatarsus, tibia, and upper surface of femur of IV. leg and the apex of the palps more or less reddish brown. The hairs mostly white; the IV. leg provided on the upper side of the tibia and metatarsus with a very delicate silky mane of enormously long white hairs, and with a shorter mane on the under side of these and of the femoral segments.

Measurements.—Total length 31; length of head-plate $3\frac{1}{2}$, width 5; length of mandible $7\frac{1}{3}$, width $2\frac{1}{2}$; palps remarkably short, $11\frac{1}{2}$ mm. long and only two-thirds of the length of the III. leg, tibia of palp $3\frac{1}{2}$, metatarsus + tarsus $4\frac{1}{2}$; length of III. leg 17; length of IV. leg $27\frac{1}{4}$, tibia 5, metatarsus 5.

Locality.—Four specimens (No. 2830) from Naroep, Great Bushmanland, Namaqualand Div. (*Max Schlechter*, Feb., 1898).

IV.—*Species of Uncertain Position.*

SOLPUGA NIGRO-BRACCATA, n. sp.

(Fig. 30.)

Jaws of mandibles extremely long; the single series of the upper jaw composed of 4 strong teeth, of which the third is only a little smaller than the other three, and the first is far removed from the

second, the space between these teeth being sub-equal to that between the second and the fourth. *Lower jaw* with two large teeth and a smaller one between them, just in front of the hind one.

Colour.—Yellowish; the jaws paler, with blackened apex. Tarsus and apical portion of metatarsus of palps and the hair on these parts dark blackish brown; tibia of palps infuscated near the apex; IV. leg with the apex of the femur, the whole tibia and the basal portion of the metatarsus deep black. The soft skin on the sides of the thoracic segments deep black above the bases of the palps and first three pairs of legs, the blackened areas almost meeting in the median line above in the segment bearing the III. pair of legs. Hairs, including those on the blackened parts of the IV. leg, pale yellowish.

Palps thickly clothed with soft silky hairs, those on the under side longer, about twice the diameter of the limb in length; all the legs with similar hairs, those on the under side of the femora forming a mane; hairs on tibia and metatarsus of IV. pair not forming a distinct mane, although somewhat longer on the upper and under sides.

Measurements.—Total length 45; length of head-plate 6, width $7\frac{1}{3}$; length of mandible 14, width $3\frac{1}{2}$; length of palp $25\frac{1}{4}$, tibia $8\frac{2}{3}$, metatarsus + tarsus 8; length of III. leg $26\frac{1}{2}$; length of IV. leg 40, tibia $7\frac{1}{3}$, metatarsus $7\frac{1}{2}$.

Locality.—One specimen, apparently an ad. ♀ (No. 1175), from Damaraland (*G. Tatlow*, 1889).

Since this paper went to press, specimens of all the species, both new and old, with the exception of *C. incerne*, *S. villosa*, *spectralis*, *nigro-braccata* and *cultrata*, nn. spp., were submitted to Professor K. Kraepelin, who kindly compared them with his own and Koch's types. I am wholly indebted to him for the identification of *H. lanatus* (Koch), *S. lethalis*, and *fusca*, Koch.

All specimens mentioned in this paper are preserved in spirits, unless the contrary is stated.